

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**CENTRAL VALLEY REGION**

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**ORDER <R5-2012-XXXX>
NPDES NO. CA0078051**

**WASTE DISCHARGE REQUIREMENTS FOR THE
CITY OF MT. SHASTA AND U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE
CITY OF MT. SHASTA WASTEWATER TREATMENT PLANT
SISKIYOU COUNTY**

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Mt. Shasta
Name of Facility	City of Mt. Shasta Wastewater Treatment Plant
Facility Address	2500 Grant Road
	Mt. Shasta, CA 96067
	Siskiyou County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a minor discharge.	

The discharge by the City of Mt. Shasta from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
EFF-001	Treated effluent	41° 16' 35.18" N	122° 19' 6.98" W	Sacramento River
REC-001	Treated effluent	41° 16' 59.16" N	122° 19' 7.80" W	Mt. Shasta Resort Golf Course
LND-001	Treated effluent	41° 17' 8.34" N	122° 16' 24.65" W	Leachfield

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	<Adoption Date>
This Order shall become effective on:	<Effective Date>
This Order shall expire on:	<Expiration Date>
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	180 days prior to the Order expiration date

I, **PAMELA C. CREEDON**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **<Adoption Date>**.

PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	City of Mt. Shasta
Name of Facility	City of Mt. Shasta Wastewater Treatment Plant
Facility Address	2500 Grant Road
	Mt. Shasta, CA 96067
	Siskiyou County
Facility Contact, Title, and Phone	Rodney Bryan, Public Works Director, (530) 926-7510 Jackie Brown, Treatment Plant Operator, (530) 926-7535
Mailing Address	305 North Mt. Shasta Boulevard, Mt. Shasta, CA 96067
Type of Facility	Publicly Owned Treatment Works (POTW)
Facility Design Flow	0.80 million gallons per day (MGD) ADWF 0.70 MGD (Leachfield)

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board), finds:

A. Background. The City of Mt. Shasta (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2007-0056 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0078051. The Discharger submitted a Report of Waste Discharge, dated 18 July 2011, and applied for a NPDES permit renewal to discharge up to 0.80 MGD of treated wastewater from the City of Mt. Shasta Wastewater Treatment Plant, hereinafter Facility. The application was deemed complete on 16 August 2011.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates the municipal wastewater treatment plant. The treatment system consists of headworks (Parshall flume, mechanical shredder, and bypass bar screen), oxidation lagoons, dissolved air flotation thickener and rapid sand filtration, chlorine contact chamber, dechlorination system, and a discharge line. Currently, the dissolved air flotation thickener and rapid sand filter are not utilized during the winter period discharge (16 November through 14 April).

Wastewater is discharged from one of the following (see table on cover page): Discharge Point No. 001 to the Sacramento River, a water of the United States, or Discharge Point No. 002 to a leachfield adjacent to Highway 89 on land owned by the U.S. Department of Agriculture, Forest Service (hereinafter Forest Service), or Discharge Point No. 003 to the Mt. Shasta Resort Golf Course. The Sacramento River

is within the Box Canyon Hydrologic Sub Area of the Upper Sacramento River Hydrologic Unit (525.22). Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

The Discharger currently provides up to 0.7 MGD of treated wastewater to the Mt. Shasta Resort Golf Course (owned and operated by Siskiyou Golf Resort, Inc.) for restricted use during the summer period. Siskiyou Golf Resort, Inc. is regulated under Water Recycling Requirements Order No. 5-01-083.

- C. Legal Authorities.** This Order is issued pursuant to section 402 of the Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (Water Code; commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).
- D. Background and Rationale for Requirements.** The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through J are also incorporated into this Order.
- E. California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.
- F. Technology-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.
- G. Water Quality-based Effluent Limitations (WQBELs).** Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as technology equivalence requirements, which are necessary to achieve water quality standards. The Central Valley Water Board has considered the factors listed in Water Code section 13241 in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all

pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Central Valley Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised October 2011)*, for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) on 1 September 1998 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Sacramento River (Box Canyon Dam to Shasta Lake) are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
EFF-001	Sacramento River (Box Canyon Dam to Shasta Lake)	<u>Existing:</u> Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Cold freshwater habitat (COLD); Spawning, reproduction, and/or early development, cold (SPWN); and Wildlife habitat (WILD)
REC-001 LND-001	Underlying Groundwater	<u>Potential:</u> Municipal and domestic supply (MUN) Industrial service supply (IND), Industrial process supply (PRO), and Agricultural supply (AGR)

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as “...*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*” The Basin Plan also states, “*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*” The Sacramento River (Box Canyon Dam to Shasta Lake) is not listed as a WQLS in the 303(d) list of impaired water bodies.

Requirements of this Order implement the Basin Plan.

- I. National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.
- J. State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
- K. Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. A Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

The Compliance Schedule Policy and the SIP do not allow compliance schedules for priority pollutants beyond 18 May 2010, except for new or more stringent priority pollutant criteria adopted by USEPA after 17 December 2008.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim

milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures. This Order does include compliance schedules and interim effluent limitations and discharge specifications. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) and discharge specifications is included in the Fact Sheet.

- L. Alaska Rule.** On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.
- M. Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS). The WQBELs consist of restrictions on acute toxicity, ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, dichlorobromomethane, nitrate, nitrite, settleable solids, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order includes water-quality based effluent limitations for BOD₅, pH, total coliform organisms, and TSS to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in establishing these requirements.
- This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD₅, TSS, and pH that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet (Attachment F section IV). In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in the Fact Sheet (Attachment F section IV.C.3).
- N. Antidegradation Policy.** 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16.

- O. Anti-Backsliding Requirements.** Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent than those in Order No. R5-2007-0056. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.
- P. Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.
- Q. Monitoring and Reporting.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), *"In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."*

The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

- R. Standard and Special Provisions.** Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The Central Valley Water Board has also included in this Order special provisions applicable to the

Discharger. Some special provisions require submittal of technical reports. All technical reports are required in accordance with Water Code section 13267. The rationale for the special provisions and need for technical reports required in this Order is provided in the Fact Sheet.

- S. Provisions and Requirements Implementing State Law.** The provisions/requirements in sections IV.B, IV.C, and V.B of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.
- T. Notification of Interested Parties.** The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.
- U. Consideration of Public Comment.** The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED, that Order No. R5-2007-0056 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

- A. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.
- B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).
- C. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.
- D. The Discharger shall not allow pollutant-free wastewater to be discharged into the treatment or disposal, system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
- E. The discharge of wastewater to the Sacramento River during the recreation season (15 June through 14 September) is prohibited.
- F. The discharge of waste classified as hazardous as defined in Section 2521(a) of Title 23, CCR, Section 2510, et seq. (hereafter Chapter 15) or designated as defined in Section 13173 of the California Water Code, is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

- a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
pH	standard units	--	--	--	6.5	8.5
Priority Pollutants						
Bis(2-Ethylhexyl) phthalate	µg/L	3.0	--	5.6	--	--
Copper, Total Recoverable	µg/L	9.1	--	19.3	--	--
Dichlorobromomethane	µg/L	1.5	--	3.6	--	--
Zinc, Total Recoverable	µg/L	12.9	--	26.2	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	4.6	--	8.4	--	--
Nitrate Plus Nitrite (as N)	mg/L	10	--	--	--	--
Settleable Solids	ml/L-hr	0.1	--	0.2	--	--

¹Based on an ADWF of 0.80 mgd.

- b. Average Dry Weather Flow.** The average dry weather discharge flow shall not exceed 0.80 million gallons per day (mgd).
- c. Percent Removal.** The average monthly percent removal of 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) shall not be less than 85 percent.
- d. Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
 - i. 70%, minimum for any one bioassay; and
 - ii. 90%, median for any three consecutive bioassays
- e. Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:
 - i. 0.011 mg/L, as a 4-day average; and
 - ii. 0.019 mg/L, as a 1-hour average.
- f. Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
 - i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
 - ii. 23 MPN/100 mL, more than once in any 30-day period; and
 - iii. 240 MPN/100 mL, at any time.

g. Total Coliform Organisms. From 16 November through 14 April, during periods of discharge when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs, effluent total coliform organisms shall not exceed:

- i. 23 MPN/100 mL, more than once in any 7-day period; and
- ii. 240 MPN/100 mL, at any time.

2. Interim Effluent Limitations

a. Effective immediately and ending 5 years from the effective date of this Order, the Discharger shall maintain compliance with the following limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the term of this Order.

Table 7. Interim Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C ¹	mg/L	30	45	60	--
	lbs/day ²	200	300	400	--
Total Suspended Solids ¹	mg/L	30	45	60	--
	lbs/day ²	200	300	400	--
pH	Standard Units	--	--	6.0	--

¹ Interim limitation only applies from 16 November through 14 April.

² Based on ADWF of 0.8 mgd.

b. Total Coliform Organisms. From 16 November through 14 April, during periods of discharge when a receiving water to effluent flow ratio of $< 20:1$ exists or the receiving water is ≥ 400 cfs, effluent total coliform organisms shall not exceed:

- i. 23 most probable number (MPN) per 100 mL, as a 7-day median; and
- ii. 240 MPN/100 mL, at any time.

B. Land Discharge Specifications – Discharge Point No. 002

1. Final Land Discharge Specifications – Discharge Point No. 002

a. Effective immediately the Discharger shall maintain compliance with the following limitations at Discharge Point No. 002, with compliance measured at Monitoring Location LND-001 as described in the Monitoring and Reporting Program.

Table 8. Land Discharge Specifications

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	30	45	60
Total Suspended Solids	mg/L	30	45	60
Settleable Solids	mL/L-Hr	0.1	--	0.2

b. Average Daily Discharge Flow. The average daily discharge flow for discharges to the leachfield shall not exceed 0.70 mgd.

c. Total Coliform Organisms. Effluent total coliform organisms shall not exceed:

- i. 23 most probable number (MPN) per 100 mL, as a 7-day median; and
- ii. 240 MPN/10 mL, at any time.

C. Reclamation Specifications – Discharge Point No. 003

1. The Discharger shall recycle its treated wastewater to the maximum extent practicable, as discussed in Section III.E.2 of the Fact Sheet.
2. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications. All tail water must be returned to the spray fields or treatment facilities.
3. Hydraulic loading of wastewater shall be at reasonable agronomic rates designed to minimize the percolation of process wastewater below the root zone (i.e., deep percolation).
4. Public contact with effluent shall be precluded through such means as fences, signs, and other acceptable alternatives.
5. Areas irrigated with effluent shall be managed to prevent breeding of mosquitoes. More specifically:
 - a. All applied irrigation water must infiltrate completely within 24 hours.
 - b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.
 - c. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitoes, shall not be used to store reclaimed water.

6. Discharges to the spray irrigation fields shall be managed to minimize erosion. Runoff from the disposal area must be captured and returned to the treatment facilities or spray fields.
7. There shall be no standing water in the disposal area 24 hours after wastewater is applied.
8. The Discharger may not discharge effluent to the disposal fields 24 hours before precipitation, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.
9. A 50-foot buffer zone shall be maintained between any watercourse and the wetted area produced during irrigation used for effluent disposal.
10. A 100-foot buffer zone shall be maintained between any spring, domestic well or irrigation well and the wetted area produced during irrigation used for effluent disposal.
11. A 50-foot buffer zone shall be maintained between effluent disposal areas and all property boundaries.
12. The discharge shall be adequately dechlorinated.
13. Effective immediately, the Discharger shall maintain compliance with the following limitations at Discharge Point 003, with compliance measured at Monitoring Location REC-001 as described in the Monitoring and Reporting Program.

Table 9. Reclamation Discharge Specifications

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30
Total Suspended Solids	mg/L	10	15	30
pH	Standard units	--	--	6.0 – 9.0 ¹
Turbidity	NTU	--	5	10

¹ Instantaneous minimum and maximum.

- a. **Average Daily Discharge Flow.** The average daily discharge flow for discharges to Mt. Shasta Golf Resort shall not exceed 0.80 mgd.
- b. **Percent Removal.** The average monthly percent removal of 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) shall not be less than 85 percent.

c. Total Coliform Organisms. Effluent total coliform organisms shall not exceed:

- i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
- ii. 23 MPN/100 mL, more than once in any 30-day period; and
- iii. 240 MPN/100 mL, at any time.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Sacramento River:

- 1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
- 2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
- 3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
- 4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
- 5. **Dissolved Oxygen:**
 - a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
 - b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
 - c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.
- 6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
- 7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
- 8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.

9. Pesticides:

- a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
- b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
- c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
- d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);
- e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
- f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor
- g. Thiobencarb to be present in excess of 1.0 µg/L.

10. Radioactivity:

- a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
- b. Radionuclides to be present in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

11. Suspended Sediments. The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. Settleable Substances. Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. Suspended Material. Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. Taste and Odors. Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

15. Temperature. The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at RSW-001 and RSW-002. Temperature changes due to controllable factors shall be limited as described below. To the extent of any conflict with the above temperature objective, the more stringent objective applies.

- From 1 December to 15 March, the maximum temperature shall be 55°F.
- From 16 March to 15 April, the maximum temperature shall be 60°F.
- From 16 April to 15 May, the maximum temperature shall be 65°F.
- From 16 May to 15 October, the maximum temperature shall be 70°F.
- From 16 October to 15 November, the maximum temperature shall be 65°F.
- From 16 November to 30 November, the maximum temperature shall be 60°F.

16. Toxicity. Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. Turbidity.

- a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;
- b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;
- c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;
- d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor
- e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

1. Release of waste constituents from any portion of the Facility shall not cause or contribute to, in combination with other sources of waste constituents, groundwater within influence of the Facility to contain:
 - a. Taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses;
 - b. Waste constituent concentrations in excess of water quality objectives or background water quality, whichever is greater;

- c. Waste constituent concentrations in excess of the concentrations specified below or background water quality, whichever is greater:
 - i. Total coliform organisms shall not exceed 2.2 MPN/100 mL over any 7-day period.
 - ii. Nitrate plus nitrite (as N) shall not exceed 10 mg/L.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions (federal NPDES standard conditions from 40 CFR Part 122) included in Attachment D of this Order.
2. The Discharger shall comply with the following provisions:
 - a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.
 - b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
 - i. violation of any term or condition contained in this Order;
 - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
 - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
 - iv. a material change in the character, location, or volume of discharge.

The causes for modification include:

- *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

- *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

- c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

- d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

Controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

- h.** A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

- i.** Safeguard to electric power failure:

The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

- j.** The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

Evaluate the effectiveness of present facilities and procedures and state when they became operational.

Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

- k.** A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.
- l.** The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- m.** The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.
- n.** For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).
- o.** In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the

Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].

- p. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.
- q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

- a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:
 - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

- ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance, including justification for seasonal limitations. For example, modifications to the Chronic Whole Effluent Toxicity Accelerated Monitoring Trigger, or the effluent limitations for ammonia, may be appropriate.
- b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.
- c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to evaluate the need for a mercury offset program for the Discharger.
- d. **Pollution Prevention.** This Order requires the Discharger to prepare a pollution prevention plan following Water Code section 13263.3(d)(3) for pH. Based on a review of the pollution prevention plan, this Order may be reopened for addition and/or modification of effluent limitations and requirements for this constituent.
- e. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.
- f. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- g. **Constituent Study.** If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituent.

- h. Groundwater Monitoring Well Network Technical Report.** Based on a review of the results of the Groundwater Monitoring Well Network Technical Report, this Order may be reopened for addition and/or modification of land discharge specifications, groundwater limitations, and/or water quality monitoring requirements.
- i. Leachfield Design Investigation.** Based on a review of the results of the Leachfield Design Investigation, this Order may be reopened for addition and/or modification of land discharge specifications, and/or monitoring requirements.
- j. Aluminum Site-Specific Study.** This Order requires the Discharger to conduct a site-specific study or other study acceptable to the Executive Officer to determine the appropriate chronic aquatic life criterion for aluminum. If the results of the Study indicate the appropriate chronic aquatic life criterion is being exceeded in the discharge, the permit may be reopened and aluminum effluent limitations established, if appropriate.
- k. Mixing Improvements.** This Order may be reopened to increase dilution credits and/or modify final effluent limitations, if appropriate, based on implementation of measures that improve mixing dynamics and minimize the size of the mixing zone(s). These improvements may include modifications to the diffuser.
- l. Flow Control.** This Order may be reopened for addition and/or modification of effluent limitations, mixing zones, and/or dilution credits, if appropriate, based on implementation of operational measures that ensure a higher minimum river to effluent flow ratio.
- m. Minimum Whitewater Recreation Flow Rate.** This Order may be reopened to allow for an adjustment to the minimum whitewater recreation flow rate, if appropriate, as a result of the establishment of an upstream receiving water flow measurement station (located downstream of Box Canyon Dam) and the submittal of information that would justify a modification to the minimum whitewater recreation flow rate.
- n. Ammonia Removal Study.** Upon completion of the Ammonia Removal Study, this Order may be reopened to add or modify final ammonia effluent limitations and/or mixing zones, as appropriate.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, and take actions to mitigate

the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

- i. **Initial Investigative TRE Workplan.** Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer. This should be a one to two page document including, at a minimum:
 - (a) A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of effluent toxicity, effluent variability, and treatment system efficiency;
 - (b) A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and
 - (c) A discussion of who will conduct the Toxicity Identification Evaluation (TIE), if necessary (e.g., an in-house expert or outside contractor).
- ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.
- iii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is $> 1 \text{ TU}_C$ (where $\text{TU}_C = 100/\text{NOEC}$). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.
- iv. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14 days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:
 - (a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated

monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is evidence of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

- (b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.
- (c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:
 - (1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;
 - (2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - (3) A schedule for these actions.

Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Central Valley Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance¹.

- b. Constituent Study.** There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives: cadmium. The Discharger shall conduct a study to evaluate the source of cadmium and conduct quarterly monitoring of cadmium in the effluent and the receiving water during the first 2 years of the permit term (8 consecutive sampling events). A study report, evaluating the results of the monitoring and the constituent's potential effect to surface water, must be submitted within **6 months following completion of the final monitoring event.**

¹ See the Fact Sheet (Attachment F section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in development of the TRE Workplan.

- c. Groundwater Monitoring Well Network Technical Report.** To determine compliance with Groundwater Limitations V.B. this provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of the leachfields. The technical report must be prepared and certified by a California-registered Professional Engineer or Geologist. **Within 6 months following adoption of this Order**, the Discharger shall submit a Groundwater Monitoring Well Network Work Plan for approval by the Executive Officer. The technical report must be completed and submitted within 12 months following Executive Officer approval of the work plan.
- d. Leachfield Design Investigation.** This provision requires the Discharger to provide a technical engineering report on the design of the Facility leachfields. Specifically, the Discharger must provide design flow rate and loading rates for treatment and soil conditions (including percolation rates) at the leachfield site. The seasonal and intermittent use of the leachfields and subsequent effect on subsurface treatment, if any, must be addressed. Year-round usage of the leachfields must also be evaluated with respect to design constraints and/or treatment capacities. The technical report must be prepared and certified by a California-registered Professional Civil Engineer. **Within 6 months following adoption of this Order**, the Discharger shall submit a Leachfield Design Investigation work plan for approval by the Executive Officer. The final Leachfield Design Investigation report must be completed and submitted within 12 months following Executive Officer approval of the work plan.
- e. Total Residual Chlorine Monitoring. Within 18 months of the effective date of this Order**, the Discharger shall install an electronic, real-time residual chlorine analyzer on the treatment plant effluent following the dechlorination process. The device shall continuously measure and record the chlorine residual and automatically notify the treatment plant operator of errors and effluent violations. The device shall have sensitivity and accuracy to demonstrate compliance with the effluent limits for chlorine residual contained in this Order. Documentation of such installation shall be submitted to the Regional Board following completion of this task.
- f. Continuous pH Analyzer. Within 18 months of the effective date of this Order**, the Discharger shall install an electronic, real-time pH analyzer on the treatment plant effluent. The device shall continuously measure and record the effluent pH and automatically notify the treatment plant operator of errors and effluent violations. The device shall have sensitivity and accuracy to demonstrate compliance with the effluent limits for pH contained in this Order. Documentation of such installation shall be submitted to the Regional Board following completion of this task.
- g. Outfall Line and Diffuser Repair.** The Facility's outfall line and diffuser must be repaired to eliminate leaks in the pipeline and to ensure effluent is discharged below the receiving water surface in a manner that optimizes the available mixing of the effluent with the receiving water. **Within 12 months following adoption**

of this Order, the Discharger shall submit a work plan for approval by the Executive Officer, to address the outfall pipeline and diffuser deficiencies. The outfall line and diffuser deficiencies must be remedied **within 5 years of the effective date of this Order**.

- h. Aluminum Site-Specific Study.** This Order requires the Discharger to conduct a site-specific study or other study acceptable to the Executive Officer to determine the appropriate chronic aquatic life criterion for aluminum. A workplan for the Study must be submitted prior to commencement of activities, for approval by the Executive Officer, and the results of the Study are due to the Central Valley Water Board no later than 180 days prior to the expiration of the permit. If the results of the Study indicate the appropriate chronic aquatic life criterion is being exceeded in the discharge, the permit may be reopened and aluminum effluent limitations established, if appropriate.

The Executive Officer may waive this requirement to complete the Study, if after two years of aluminum monitoring (as outlined in Attachment E) of the effluent and the receiving water, the monitoring results indicate that the Discharger's efforts at aluminum source control at the Facility have reduced effluent aluminum levels to below the National Recommended Water Quality Criteria of 87 µg/L (chronic aquatic-life criteria) and the development of site-specific aluminum chronic aquatic life criterion for the discharge is not necessary.

- k. Ammonia Reduction Study. 180 days prior to the expiration date of this Order**, the Discharger shall submit an ammonia reduction study. The study shall include a description of ammonia reduction measures implemented during the current permit cycle and/or scheduled for future implementation, site-specific constraints, if any, related to effluent ammonia reduction, and an evaluation of whether there are additional practicable ammonia reduction measures that may be implemented at the facility in order to reduce ammonia concentrations in the effluent and minimize the size of the ammonia mixing zone. If additional ammonia concentration reductions are practicable then the size of future mixing zones and dilution credits for ammonia may be reduced until such practicable concentration reductions have been achieved.

3. Best Management Practices and Pollution Prevention

- a. Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to identify and address sources of salinity from the Facility. The plan shall be completed and submitted to the Central Valley Water Board **within 9 months of the adoption date of this Order** for the approval by the Executive Officer.

4. Construction, Operation and Maintenance Specifications

- a. Turbidity.** Effective **immediately** or upon compliance with Special Provision VI.C.6.a, whichever is sooner, effluent turbidity shall not exceed:

- i. 2 NTU, as a daily average;
- ii. 5 NTU, more than 5% of the time within a 24-hour period; and
- iii. 10 NTU, at any time.

The effluent turbidity specification shall not apply from 16 November through 14 April when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs.

Prior to compliance with Special Provision VI.C.6.a., effluent turbidity shall not exceed 5.0 NTU and 10 NTU, as a weekly average and a daily maximum, respectively, from 15 April through 14 June and 16 September through 15 November. This interim specification is consistent with the turbidity effluent limitations contained in the previous Order.

- b. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
 - i. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
 - ii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,
 - (b) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
 - (c) Weeds shall be minimized.
 - (d) Dead algae, vegetation, and debris shall not accumulate on the water surface.
 - iii. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).
 - iv. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).
 - v. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the Land Discharge Specification at section IV.C.4.a.iv., above.
 - vi. The discharge of waste classified as “hazardous” as defined in section 2521(a) of Title 23, California Code of Regulations (CCR), or “designated”, as defined in section 13173 of the Water Code, to the treatment ponds is prohibited.

Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).

5. Special Provisions for Municipal Facilities (POTWs Only)

- a. Pretreatment Requirements.** The average dry weather design flow for the Facility is less than 5 mgd and the Facility does not receive discharges from Significant Industrial Users. Under these conditions, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations set forth in 40 CFR Part 403.
- b. Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 CFR Part 503.
 - i.** Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, division 2, subdivision 1, section 20005, et seq. Removal for further treatment, storage, disposal, or reuse at sites (e.g., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy these specifications.
 - ii.** Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant performance.
 - iii.** The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations in section V.B. of this Order. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations included in section V.B. of this Order.

The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. If the

State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not they have been incorporated into this Order.

The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.

Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.

Within 180 days of the permit effective date, the Discharger shall review and update its existing biosolids use or disposal plan, and submit it to the Central Valley Water Board. The updated plan shall describe at a minimum:

- (a) Sources and amounts of biosolids generated annually.
- (b) Location(s) of on-site storage and description of the containment area.
- (c) Plans for ultimate disposal. For landfill disposal, include the Central Valley Water Board's waste discharge requirement numbers that regulate the particular landfill; the present classification of the landfill; and the name and location of the landfill.

- c. Biosolids Storage and Transportation Specifications.** Biosolids shall be considered to be "stored" if they are placed on the ground or in non-mobile containers (i.e. not in a truck or trailer) at an intermediate storage location away from the generator/processing for more than 48 hours. Biosolids shall be considered to be "staged" if placed on the ground for brief periods of time solely to facilitate transfer of the biosolids between transportation and application vehicles.
- i. Biosolids shall not be stored directly on the ground at any one location for more than seven (7) consecutive days.
 - ii. Facilities for the storage of Class B biosolids shall be located, designed and maintained to restrict public access to biosolids.
 - iii. Biosolids storage facilities shall be designed and maintained to prevent washout or inundation from a storm or flood with a return frequency of 100 years.
 - iv. Biosolids storage facilities, which contain biosolids, shall be designed and maintained to contain all storm water falling on the biosolids storage area during a rainfall year with a return frequency of 100 years.

- v. Biosolids placed on site for more than 24 hours shall be covered.
 - vi. Biosolids storage facilities shall be designed, maintained and operated to minimize the generation of leachate and the effects of erosion.
 - vii. If biosolids are to be stored at the site, a plan describing the storage program and means of complying with the specifications contained in sections VI.C.5.b and c of this Order shall be submitted for the Central Valley Water Board's staff approval. The storage plan shall also include an adverse weather plan.
 - viii. The Discharger shall operate the biosolids storage facilities in accordance with the approved biosolids storage plan.
 - ix. The Discharger shall immediately remove and relocate any biosolids stored on site in violation of this Order.
 - x. All biosolids shall be transported in covered vehicles capable of containing the designated load.
 - xi. All biosolids having a water content that is capable of leaching liquids shall be transported in leak proof vehicles.
 - xii. Each biosolids transport driver shall be trained as to the nature of its load and the proper response to accidents or spill events and shall carry a copy of an approved spill response plan.
 - xiii. The Discharger shall avoid the use of haul routes near residential land uses to the extent possible. If the use of haul routes near residential land uses cannot be avoided, the Discharger shall limit project-related truck traffic to daylight hours.
- d. Collection System.** On 2 May 2006, the State Water Board adopted State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system.

This Order, and the Monitoring and Reporting Program which is a part of this Order, requires that certain parameters be monitored on a continuous basis. The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger shall establish an electronic system for operator notification for continuous recording

device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed within 6 months of adoption of this permit. For systems installed following permit adoption, the notification system shall be installed simultaneously.

6. Other Special Provisions

- a. During periods of effluent discharge to surface water, with the exception of effluent discharges from 16 November through 14 April when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs, all wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to DPH reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), or equivalent, as discussed in the Fact Sheet, Section VII.B.6.a., and in accordance with the compliance schedule in Section VI.C.7.a, below.

7. Compliance Schedules

- a. **Compliance Schedule for Title 22, or Equivalent, Disinfection Requirements.** By **5 years from the effective date of this Order**, wastewater discharged to the Sacramento River (with the exception of effluent discharges from 16 November through 14 April when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs) shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH; formerly the Department of Health Services) reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22), or equivalent. The effluent shall be disinfected in accordance with the total coliform organisms effluent limitations set forth in this Order, which are equivalent to “disinfected tertiary recycled water” disinfection requirements, however; wastewater treated for discharge need not comply with the CT¹ requirement specified in Title 22 Section 60301.230(a) or the disinfection process outlined in Section 60301.230(b). Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1).
- b. **Compliance Schedules for Final Effluent Limitations for BOD₅, TSS, and pH.** This Order requires compliance with the final effluent limitations for BOD₅, TSS, and pH by **5 years from the effective date of this Order**. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1). The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations:

¹ The product of the total chlorine residual multiplied by the modal contact time measured at the same point.

<u>Task</u>	<u>Date Due</u>
i. Submit Method of Compliance Workplan/Schedule	Within 6 months after adoption of this Order
ii. Submit and Implement Pollution Prevention Plan (PPP) ¹ for pH	Within 6 months after adoption of this Order
iii. Progress Reports ²	1 June , annually, after approval of work plan until final compliance
iv. Full Compliance	5 years from effective date of Order.

¹ The PPP for pH shall be prepared and implemented in accordance with Water Code section 13263.3(d)(3) as outlined in the Fact Sheet (Attachment F section VII.B.3.b).

² The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

VII. COMPLIANCE DETERMINATION

- A. BOD₅ and TSS Effluent Limitations (Section IV).** Compliance with the final effluent limitations for BOD₅ and TSS required in Limitations and Discharge Requirements section IV shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements section IV for percent removal shall be calculated using the arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.
- B. Average Dry Weather Flow Effluent Limitations (Section IV).** The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September). The inflow and infiltration in the Mt. Shasta area is high due to the presence of springs and high groundwater which persist late into the summer. For this reason, the dry weather flow period may be considered to be 1 August through 31 October.
- C. Total Coliform Organisms Effluent Limitations (Section IV.A.1.f. and g.).** For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 or 23

(depending in flow conditions) per 100 milliliters, the Discharger will be considered out of compliance. Because total coliform organism limitations vary based on effluent and receiving water flows and dilution ratios, determination of compliance with the limitations requires the Discharger to report effluent and receiving water flows and dilution ratios for the appropriate time period. If the Discharger is unable to adequately demonstrate compliance with the “flow-dependent” limitations for total coliform organisms, as a result of limited real-time access to receiving water flow conditions, then the more stringent of the total coliform organism limitations (Section IV.A.1.g) will apply for the purpose of compliance determination.

- D. Total Residual Chlorine Effluent Limitations (Section IV).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer’s recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

- E. Volatile Organic Compounds (VOCs).** VOCs include all constituents listed in USEPA Method 502.2 (Attachment I). When calculating the average monthly of each VOC, non-detect results shall be counted as one-half the detection level.
- F. Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations IV.A.1 and Interim Effluent Limitations IV.A.2 are based on the permitted average dry weather flow and calculated as follows:.

$$\text{Mass (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34 \text{ (conversion factor)}$$

If the effluent flow exceeds the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.a and Interim Effluent Limitations IV.A.2 shall not apply. If the effluent flow is below the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations do apply.

- G. Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in Attachment

A, Attachment E, and Attachment I of this Order. For purposes of reporting and administrative enforcement by the Central Valley Water Board and the State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

ATTACHMENT A – DEFINITIONS

Acutely Toxic Conditions

As used in the context of mixing zones, refers to lethality that occurs to mobile aquatic organisms that move or drift through the mixing zone.

Arithmetic Mean (μ)

Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)

The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)

The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative

Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic

Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)

CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Completely-Mixed Discharge

A condition that means not more than a 5 percent difference, accounting for analytical variability, in the concentration of a pollutant exists across a transect of the water body at a point within two stream/river widths from the discharge point.

Daily Discharge

Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of 1 day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)

DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Dilution Ratio

Dilution ratio is the critical low flow of the upstream receiving water divided by the flow of the effluent discharged.

Effluent Concentration Allowance (ECA)

ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration

The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams

that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Four-Day Average of Daily Maximum Flows

The average of daily maximums taken from the data set in four-day intervals.

Incompletely-Mixed Discharge

A discharge that contributes to a condition that does not meet the meaning of a completely-mixed discharge condition.

Inland Surface Waters

All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation

The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation

The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation)

Maximum Daily Effluent Limitation (MDEL)

The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median

The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR Part 136, Attachment B, revised as of 3 July 1999.

Minimum Level (ML)

ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical

procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)

Sample results which are less than the laboratory's MDL.

Ocean Waters

The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)

PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL)

RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Central Valley Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based

on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System

The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ)

Standard Deviation is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

μ is the arithmetic mean of the observed values; and

n is the number of samples.

Toxicity Reduction Evaluation (TRE)

TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

1Q10

1Q10 is the lowest flow that occurs for one day with a statistical frequency of once every 10 years.

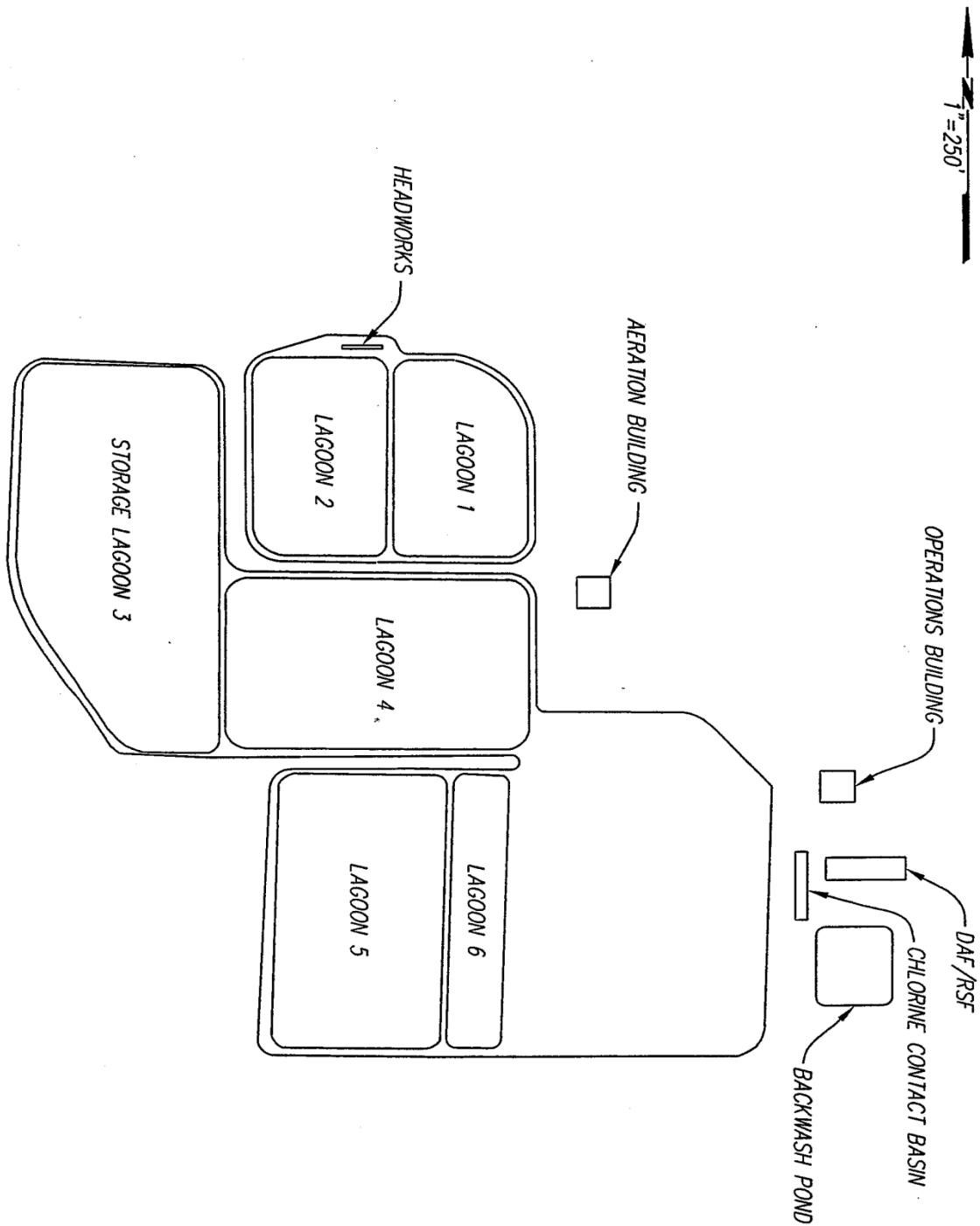
7Q10

7Q10 is the average low flow that occurs for seven consecutive days with a statistical frequency of once every 10 years.

ATTACHMENT B – MAP



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (Water Code) and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR 122.41(c))

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR 122.41(d))

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR 122.41(g))

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR 122.5(c))

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR 122.41(i); Water Code section 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR 122.41(i)(4))

G. Bypass

1. Definitions

- a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR 122.41(m)(1)(i))
 - b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR 122.41(m)(1)(ii))
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR 122.41(m)(2))

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 122.41(m)(4)(i)(A));
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and
 - c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)(i)(C))
4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR 122.41(m)(4)(ii))
5. Notice
 - a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR 122.41(m)(3)(i))
 - b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR 122.41(m)(3)(ii))

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR 122.41(n)(1))

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance

was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 122.41(n)(2))

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 CFR 122.41(n)(3)(ii));
 - c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 122.41(n)(3)(iv))
3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR 122.41(n)(4))

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR 122.41(f))

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR 122.41(b))

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR 122.41(l)(3) and 122.61)

III. STANDARD PROVISIONS – MONITORING

- A.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR 122.41(j)(1))
- B.** Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4) and 122.44(i)(1)(iv))

IV. STANDARD PROVISIONS – RECORDS

- A.** Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2))
- B. Records of monitoring information shall include:**
 - 1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));
 - 2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));
 - 3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));
 - 4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));
 - 5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and
 - 6. The results of such analyses. (40 CFR 122.41(j)(3)(vi))
- C. Claims of confidentiality for the following information will be denied (40 CFR 122.7(b)):**
 - 1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and
 - 2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2))

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR 122.41(k))
2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3))
3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR 122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR 122.22(b)(2)); and
 - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 122.22(b)(3))
4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of

Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 122.22(c))

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
(40 CFR 122.22(d))

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in Section VI.C., Monitoring and Reporting Program (Attachment E), and Attachment I in this Order. (40 CFR 122.22(l)(4))
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i))
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii))
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR 122.41(l)(4)(iii))

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR 122.41(l)(5))

E. Twenty-Four Hour Reporting

1. The Discharger shall notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i))
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR 122.41(l)(6)(ii)):
 - a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(A))
 - b. Any upset that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(B))
3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR 122.41(l)(6)(iii))

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b) (40 CFR 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR 122.41(l)(1)(ii))

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 122.41(l)(2))

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR 122.41(l)(7))

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8))

VI. STANDARD PROVISIONS – ENFORCEMENT

- A.** The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR 122.42(b)):

- 1.** Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR 122.42(b)(1)); and
- 2.** Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 CFR 122.42(b)(2))
- 3.** Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR 122.42(b)(3))

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Title 40 of the Code of Federal Regulations (CFR), section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (Water Code) sections 13267 and 13383 also authorize the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.
- B.** Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
- C.** Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.
- D.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

- E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.
- F.** Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of CWC section 13176, and must include quality assurance/quality control data with their reports.
- G.** The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.
- H.** The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.
- I.** The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Immediately upstream of influent Parshall Flume. 41°16'48.72" N, 122°18'53.08" W
001	EFF-001	Sampled at effluent discharge from dechlorination chamber (to river). 41°16'35.18" N, 122°19'6.98" W
002	LND-001	Sampled at effluent discharge from dechlorination chamber (to Highway 89 Leachfield). 41°16'35.18" N, 122°19'6.98" W
003	REC-001	Sampled at effluent discharge from dechlorination chamber (to Mt. Shasta Golf Resort). 41°16'35.18" N, 122°19'6.98" W
--	REC-002	Effluent prior to dechlorination chamber.
--	RSW-001	Lake Siskiyou immediately upstream of lake discharge to Sacramento River at Box Canyon Dam or Sacramento River immediately downstream of Box Canyon Dam. 41°16'45.15" N, 122°19'40.65" W
--	RSW-002	Sacramento River 1.15 miles downstream of Facility outfall, upstream of Ney Springs fishing access. 41°16'17.84" N, 122°18'50.28" W
--	RGW-001	Upgradient Monitoring Well (Tillman Well) 41°16'42.0" N, 122°14'34.8" W
--	RGW-002	Downgradient Monitoring Well (Needland Well) 41°15'52.5" N, 122°16'27.0" W
--	RGW-003	Downgradient Monitoring Well (Highway 89 Leachfield Well) 41°16'48.7" N, 122°16'31.5" W
--	LND-002	Highway 89 Leachfield Area
--	BIO-001	Biosolids Storage Area
--	SPL-001	Municipal water supply

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the Facility at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	¹
pH	Standard Units	Grab ²	1/Week	¹
BOD 5-day @ 20°C	mg/L, lbs/day	24-hr Composite, ³ Calculate	1/Week	¹
Total Suspended Solids	mg/L, Calculate	24-hr Composite, ³ Calculate	1/Week	¹

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; or by methods approved by the Central Valley Water Board or the State Water Board.

² Grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.

³ 24-hour flow proportional composite.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor treated wastewater at EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring (EFF-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	¹
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculate	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculate	1/Week	--
pH	Standard Units	Meter	Continuous ^{3, 4, 15}	¹
Priority Pollutants				
Bis (2-ethylhexyl) phthalate	µg/L	Grab	1/Month	^{1, 5, 6}
Cadmium, Total Recoverable	µg/L	24-hr Composite	1/Quarter ¹⁶	^{1, 6}
Copper, Total Recoverable	µg/L	24-hr Composite	1/Month	^{1, 6}
Dichlorobromomethane	µg/L	Grab	1/Month	^{1, 6}
Zinc, Total Recoverable	µg/L	24-hr Composite	1/Month	^{1, 6}
Priority Pollutants (Attachment I Study)	µg/L	24-hr Composite ⁷	⁸	^{1, 6}
Non-Conventional Pollutants				
Aluminum, Total Recoverable	µg/L	24-hr Composite	1/Month	^{1, 9}
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month ^{3, 11}	¹
Chlorine, Total Residual	mg/L	Meter	Continuous	^{1, 10}
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	¹
Hardness (as CaCO ₃)	mg/L	Grab	1/Month ¹²	¹
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month ¹³	¹
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month ¹³	¹
Settleable Solids	mL/L	Grab	1/Week	¹
Standard Minerals ¹⁴	mg/L	Grab	1/Year	¹
Temperature	°C	Grab	3/Week ^{3, 4}	¹
Total Coliform Organisms	MPN/100 mL	Grab	2/Week	¹
Total Dissolved Solids	mg/L	Grab	1/Month	¹
Turbidity	NTU	Meter	1/Day	
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

² 24-hour flow-proportional or time composite.

³ pH and temperature shall be recorded at the time of ammonia sample collection.

⁴ A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

⁵ In order to verify if bis (2-ethylhexyl) phthalate is truly present in the effluent discharge, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

⁶ For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State

-
- Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. Sampling and analysis of Bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.
- ⁷ Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
- ⁸ Priority pollutants shall be sampled semiannually during the third and fourth year following the date of permit adoption and shall be conducted concurrently with upstream receiving water monitoring for hardness (as CaCO₃) and pH. [Refer to Attachment I]
- ⁹ Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
- ¹⁰ Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.
- ¹¹ Concurrent with whole effluent toxicity monitoring.
- ¹² Hardness samples shall be collected concurrently with metals samples.
- ¹³ Monitoring for nitrite and nitrate shall be conducted concurrently.
- ¹⁴ Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
- ¹⁵ Daily grab sample allowed during interim period prior to continuous pH analyzer installation.
- ¹⁶ Quarterly for the first two years, annual thereafter if results indicate no Reasonable Potential.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform quarterly acute toxicity testing, concurrent with effluent ammonia sampling.
2. Sample Types – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001.
3. Test Species – Test species shall be rainbow trout (*Oncorhynchus Mykiss*).
4. Methods – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. Test Failure – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform annual three species chronic toxicity testing.
2. Sample Types – Effluent samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in this Monitoring and Reporting Program.
3. Sample Volumes – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. Test Species – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:
 - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
 - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
 - The green alga, *Selenastrum capricornutum* (growth test).
5. Methods – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002.
6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
7. Dilutions – For regular and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and two controls. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water	0	25	50	75	87.5	100	0
% Laboratory Water	0	0	0	0	0	0	100

8. **Test Failure** – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

- a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or
- b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)

C. WET Testing Notification Requirements. The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed in TUC, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate, when testing is performed using the full dilution series.
 - b. The statistical methods used to calculate endpoints (when testing is performed using the full dilution series);

- c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD) (when testing is performed using the full dilution series);
- d. The dates of sample collection and initiation of each toxicity test; and
- e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUC, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

- 2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.
- 3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan.
- 4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
 - a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.
 - b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.
 - c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location LND-001

1. The Discharger shall monitor treated wastewater discharged to the Highway 89 Leachfield at LND-001 as follows:

Table E-5. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	--
Monthly Discharge volume	MG	Calculated	1/Month	--
Chlorine, Total Residual	mg/L	Meter	Continuous	1
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	24-hr Composite	1/Week	1
	lbs/day	Calculate	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite	1/Week	1
	lbs/day	Calculate	1/Week	--
pH	s.u.	Meter	Continuous ²	1
Settleable Solids	mL/L – Hr	Grab	1/Week	1
Total Coliform Organisms	MPN/ 100 mL	Grab	2/Week	1

- 1 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
- 2 Daily grab sample allowed during interim period prior to continuous pH analyzer installation.

VII. RECLAMATION MONITORING REQUIREMENTS

A. Monitoring Location REC-001

1. The Discharger shall monitor treated wastewater for discharge to the Mt. Shasta Golf Course at REC-001 as follows:

Table E-6a. Reclamation Monitoring Requirements (REC-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	mgd	Meter	Continuous	--
Monthly Discharge volume	MG	Calculated	1/Month	--
Chlorine, Total Residual	mg/L	Meter	Continuous	1
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	24-hr Composite	1/Week	1
	lbs/day	Calculate	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite	1/Week	1
	lbs/day	Calculate	1/Week	--
pH	s.u.	Meter	Continuous ²	1
Total Coliform Organisms	MPN/ 100 mL	Grab	1/Day	1

Turbidity	NTU	Meter	3/Day	¹
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¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

² Daily grab sample allowed during interim period prior to continuous pH analyzer installation.

B. Monitoring Location REC-002

1. The Discharger shall monitor treated wastewater prior to dechlorination at REC-002 as follows:

Table E-6b. Reclamation Monitoring Requirements (REC-002)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chlorine, Total Residual	mg/L	Grab	1/Week	¹

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001

1. The Discharger shall monitor the Sacramento River, upstream of the discharge, at RSW-001 as follows:

Table E-7a. Receiving Water Monitoring Requirements (RSW-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow ³	cfs	Meter	Daily	--
pH	s.u.	Grab	1/Week	1
Temperature	°F	Grab	1/Week	1
Dissolved Oxygen	mg/L	Grab	1/Week	1
Turbidity	NTU	Grab	1/Week	1
Total Coliform Organisms	MPN/ 100 mL	Grab	1/Week	1
Hardness as CaCO ₃	mg/L	Grab	1/Month	1
Bis (2-ethylhexyl) phthalate	µg/L	Grab	2/Year	1
Cadmium, Total Recoverable	µg/L	Grab	2/Year	1
Dichlorobromomethane	µg/L	Grab	2/Year	1
Copper, Total Recoverable	µg/L	Grab	2/Year	1
Zinc, Total Recoverable	µg/L	Grab	2/Year	1
Aluminum, Total Recoverable	µg/L	Grab	2/Year	1
Standard Minerals ²	mg/L	Grab	1/Year	1

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

² Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

³ Flow to be measured at discharge from Box Canyon Dam from Lake Siskiyou.

B. Monitoring Location RSW-002

1. The Discharger shall monitor the Sacramento River, downstream of the discharge, at RSW-002 as follows:

Table E-7b. Receiving Water Monitoring Requirements (RSW-002)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dilution Ratio	cfs	Calculated ³	Daily ⁴	--
pH	s.u.	Grab	1/Week	1
Temperature	°F	Grab	1/Week	1
Dissolved Oxygen	mg/L	Grab	1/Week	1
Turbidity	NTU	Grab	1/Week	1
Total Coliform Organisms	MPN/ 100 mL	Grab	1/Week	1
Hardness as CaCO ₃ ²	mg/L	Grab	2/Year	1
Bis (2-ethylhexyl) phthalate	µg/L	Grab	2/Year	1
Dichlorobromomethane	µg/L	Grab	2/Year	1
Copper	µg/L	Grab	2/Year	1
Zinc	µg/L	Grab	2/Year	1

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

² Concurrent with semiannual receiving water metals sampling.

³ Calculated using Box Canyon Dam flow measurement data and plant effluent flow data.

⁴ Monitoring only required between from 16 November through 14 April.

C. Monitoring Location RGW-001, RGW-002, RGW-003

1. Prior to construction and/or beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Well Nos. RGW-001, RGW-002, and RGW-003) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at RGW-001, RGW-002, RGW-003, and any new groundwater monitoring wells shall include, at a minimum, the following:

Table E-8. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Quarter	--
Groundwater Elevation ¹	±0.01 feet	Calculated	1/Quarter	--
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	degrees	Calculated	1/Quarter	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	²
Total Dissolved Solids	mg/L	Grab	1/Quarter	²
Fixed Dissolved Solids	mg/L	Grab	1/Quarter	²
pH	standard units	Grab	1/Quarter	²
Total Coliform Organisms	MPN/100 mL	Grab	1/Quarter	²
Total Nitrogen	mg/L	Grab	1/Quarter	²
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	²
Ammonia (as NH ₄)	mg/L	Grab	1/Quarter	²
Total Kjeldahl Nitrogen	mg/L	Grab	1/Quarter	²
Standard Minerals ³	µg/L	Grab	1/Quarter	²

¹ Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well. The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow, which must be reported.

² Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

³ Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

- a. A composite sample of sludge shall be collected annually, at Monitoring Location BIO-001 in accordance with USEPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for the metals listed in Title 22. In addition to the quantitative results of the chemical analysis, sludge percent solids must be included with the results.
- b. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

B. Municipal Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the municipal water supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Table E-9. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Dissolved Solids ¹	mg/L	Grab	1/year	³
Electrical Conductivity @ 25°C ¹	µmhos/cm	Grab	1/year	³
Standard Minerals ²	mg/L	Grab	1/year	³

¹ If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.

² Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

³ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

C. Leachfield Area

1. Monitoring Location LND-002

- b. During periods of discharge to the leachfield, the Discharger shall inspect the leachfield area weekly and submit the results in the monthly monitoring report.

Monitoring shall include any observations of seeps, erosion, field saturation, ponding liquid, the presence of nuisance, and other field conditions.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State Water Board or the Central Valley Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal. Upon notification directing the Discharger to submit electronic SMRs (eSMRs) and discontinue submitting hard copy SMRs, the Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs for the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs.
2. The Discharger shall report in the SMR the results for all monitoring specified in this Monitoring and Reporting Program under sections III through IX. The Discharger shall submit monthly, quarterly, semiannual, annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more

frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	1 st day of month following Permit effective date ¹	Continuous	Submit with monthly SMR
1/Hour	1 st day of month following Permit effective date ¹	Hourly	Submit with monthly SMR
1/Day	1 st day of month following Permit effective date ¹	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week	1 st day of month following Permit effective date ¹	Sunday through Saturday	Submit with monthly SMR
1/Month	1 st day of month following Permit effective date ¹	First day of calendar month through last day of calendar month	32 days from the end of the monitoring period
1/Quarter	1 st day of month following Permit effective date ¹	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	32 days from the end of the monitoring period
2/Year	1 st day of month following Permit effective date ¹	1 January through 30 June 1 July through 31 December	32 days from the end of the monitoring period
1/Year	1 st day of month following Permit effective date ¹	1 January through 31 December	32 days from the end of the monitoring period
¹ Monitoring from the permit effective date to the 1 st day of month following permit effective date shall be conducted in accordance with the Monitoring and Reporting Program in previous Order R5-2007-0056.			

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

- b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
 - d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.
- 5. Compliance Determination.** Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above and in Attachment A and Attachment I of this Order. For purposes of reporting and administrative enforcement by the Central Valley Water Board and the State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).
- 6. Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

- 7. Reporting Requirements.** In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible.
- a. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations or with other waste discharge requirements (e.g., discharge specifications, receiving water limitations, special provisions, etc.).
 - b. Reports must clearly show when discharging to EFF-001 or other permitted discharge locations. Reports must show the date and time that the discharge started and stopped at each location.
 - c. The highest daily maximum for the month and monthly and weekly averages shall be determined and recorded as needed to demonstrate compliance.
- 8. Calculation Requirements.** The following shall be calculated and reported in the SMRs:
- a. **Annual Average Limitations.** For constituents with effluent limitations specified as “annual average” the Discharger shall report the annual average in the June SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.
 - b. **Mass Loading Limitations.** For BOD₅, TSS, and ammonia, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be calculated as follows:

$$\text{Mass Loading (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34$$

When calculating daily mass loading, the daily average flow and constituent concentration shall be used. For weekly average mass loading, the weekly average flow and constituent concentration shall be used. For monthly average mass loading, the monthly average flow and constituent concentration shall be used.
 - c. **Removal Efficiency (BOD₅ and TSS).** The Discharger shall calculate and report the percent removal of BOD₅ and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.
 - d. **Total Coliform Organisms Effluent Limitations.** The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7-day median of total coliform organisms shall be calculated as specified in Section VII.C. of the Limitations and Discharge Requirements.
 - e. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.

- f. Turbidity Receiving Water Limitations.** The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.17.a-e. of the Limitations and Discharge Requirements.
- g. Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at RSW-001 and RSW-002.

Regional Water Quality Control Board
Central Valley Region
NPDES Compliance and Enforcement Unit
364 Knollcrest Drive, Suite #205
Redding, CA 96002

C. Discharge Monitoring Reports (DMRs)

1. As described in section X.B.1 above, at any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs).

D. Other Reports

- 1. Special Study Reports and Progress Reports.** As specified in the compliance time schedules required in the Special Provisions contained in section VI of the Order, special study and progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Table E-11. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Title 22 Disinfection Requirements (Section VI.C.7.a.)	1 December , annually, until final compliance
Compliance Schedules for Final Effluent Limitations for BOD ₅ , TSS, and pH, compliance with final effluent limitations. (Section VI.C.7.b.)	1 June , annually, until final compliance
Compliance Schedules for Final Effluent Limitations for pH, Pollution Prevention Plan (Section VI.C.7.b)	1 June , annually, after approval of workplan until final compliance

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, PMP, and Pollution Prevention Plan required by Special Provisions VI.C.2, VI.C.3, and VI.C.7 of this Order. The Discharger shall report the progress in satisfaction of compliance schedule dates specified in the Special Provision at section VI.C.7 of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date or in compliance with SMR reporting requirements described in subsection X.B.5 above.
3. Within 60 days of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP.
4. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage facilities.
5. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third and fourth year of this permit term, the Discharger shall conduct semi-annual monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.
6. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

- a.** The names, certificate grades, and general responsibilities of all persons employed at the Facility.
- b.** The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
- c.** A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.
- d.** A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
- e.** The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5A470105001
Discharger	City of Mt. Shasta
Name of Facility	City of Mt. Shasta Wastewater Treatment Plant
Facility Address	2500 Grant Road
	Mt. Shasta, CA 96067
	Siskiyou County
Facility Contact, Title and Phone	Rodney Bryan, Public Works Director, (530) 926-7510 Jackie Brown, Treatment Plant Operator, (530) 926-7535
Authorized Person to Sign and Submit Reports	Rodney Bryan, Public Works Director, (530) 926-7510
Mailing Address	305 North Mt. Shasta Boulevard, Mt. Shasta, CA 96067
Billing Address	305 North Mt. Shasta Boulevard, Mt. Shasta, CA 96067
Type of Facility	POTW
Major or Minor Facility	Minor
Threat to Water Quality	1
Complexity	B
Pretreatment Program	N
Reclamation Requirements	Producer
Facility Permitted Flow	0.80 million gallons per day (mgd) (ADWF) 0.70 mgd (Leachfield)
Facility Design Flow	0.80 mgd (ADWF) 2.1 mgd (PWWF) 0.70 mgd (Leachfield)
Watershed	Upper Sacramento Hydrologic Unit (525.00) Mount Shasta Hydrologic Area (525.20) Box Canyon Hydrologic Subarea (525.22)
Receiving Water	Sacramento River
Receiving Water Type	Inland Surface Water

- A.** The City of Mt. Shasta (hereinafter Discharger) is the owner and operator of the City of Mt. Shasta Wastewater Treatment Plant (hereinafter Facility), a publicly-owned treatment works. The U.S. Department of Agriculture, Forest Service (hereinafter

USFS) owns the land property associated with the Facility's land disposal to leachfield operation.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- B.** The Facility discharges wastewater to the Sacramento River, a water of the United States, and is currently regulated by Order No. R5-2007-0056 which was adopted on 21 June 2007 and expired on 1 June 2012. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.
- C.** The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 18 July 2011. On 10 May 2012, the USFS submitted a letter of concurrence on the information provided in the Discharger's ROWD.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Mt. Shasta and serves a population of approximately 3,595. Wastewater influent is primarily domestic.

The Facility is located approximately 2 miles south of the City of Mt. Shasta on the west side of Interstate-5 and adjacent to the Sacramento River immediately downstream of Box Canyon Dam and Lake Siskiyou.

The Discharger is the owner and operated of the collection system, which is regulated under the State Water Board General Order, Water Quality Order No. 2006-0003, effective November 2006.

Order R5-2007-0056 contained seasonal effluent limitations on the discharge which required secondary treatment during the winter period and advanced-secondary treatment during the fall and spring discharge period. Surface water discharge during the summer period is prohibited.

The Discharger has an agreement with Siskiyou Golf Resort, Inc. (owner and operator of Mt. Shasta Resort Golf Course) to provide treated wastewater from the Facility to Mt. Shasta Resort Golf Course (Resort) for golf course irrigation. Siskiyou Golf Resort, Inc. is regulated under Water Recycling Requirements Order No. 5-01-083. The Resort is required to apply recycled water in a manner to meet requirements for a "Restricted Access" golf course. The effluent limits, prohibitions, and specifications in Water Recycling Requirements Order No. 5-01-083 require the Discharger to treat the recycled water to a standard that is higher than that for "disinfected-secondary-23 recycled water" (as defined in Chapter 3, Division 4, Title 22, CCR, Section 60301 et seq. (hereafter Title 22)). These more stringent limits, which essentially meet "disinfected secondary-2.2 recycled water" (as defined in Title 22) requirements, are justified based on the

Discharger's proven ability to treat to a higher level, and the practices of the Resort, which may include washing of equipment and hand irrigation at times when golfers are present.

The recycled water is filtered, but due to the current Facility design (lagoon treatment) being conducive to the growth of algae, the effluent cannot consistently meet Title 22 filtered wastewater criteria for an "Unrestricted Access" golf course.

The Discharger provides as much available recycled water the Resort can take during the Resort irrigation season; which is typically between April and October. Over the past 4 years, the Discharger has provided an average of 50 million gallons of irrigation water per irrigation discharge season.

The Discharger may also dispose of treated wastewater to a leachfield on property owned by the USFS. Discharge to the leachfield occurs when golf course needs have been met and/or the Discharger cannot meet the reclamation specifications and/or a higher quality effluent cannot be maintained for a surface water discharge. Order No. R5-2007-0056 described the use of the leachfield as limited to the summer months with an annual average usage of 20 days per year, however; the Discharger discharged to the leachfield 222 days in 2011.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility design daily average flow (ADWF) capacity is 0.8 million gallons per day (mgd). The peak wet weather capacity is 2.1 mgd, based on secondary treatment only. The treatment system consists of headworks (Parshall flume, mechanical shredder, and bypass bar screen), oxidation lagoons, dissolved air flotation thickener and rapid sand filtration, chlorine contact chamber, dechlorination system, and a discharge line. The dissolved air flotation thickener and sand filtration unit have a hydraulic capacity of 0.8 mgd. The dissolved air flotation thickener and rapid sand filter are not utilized in the winter.

The Facility's current ADWF is 0.55 mgd and the average peak wet weather flow is 1.8 mgd. The highest PWWF was recorded on 22 March 2011 at 2.65 mgd.

The outfall to the Sacramento River is located at the base of a steep canyon wall located approximately 200 feet below the elevation of the Facility. Treated effluent is discharged from the Facility through a combination 15-inch and 10-inch diameter gravity outfall pipeline to an energy dissipater. The pipeline from the dissipater to the outfall is a 12-inch diameter pipe. The angle of entry to the river is approximately 30 degrees. Effluent is discharged to the river through a multiport diffuser.

Land disposal is to a 42-acre leachfield with a design ADWF of 0.7 mgd. The disposal area consists of two intermittent leachfields with a total of 20,000 lineal feet of percolation trench. The trenches vary from 8 to 12 feet in depth, with perforated leachpipe generally installed at a depth of 5 feet. A series of splitter boxes allow the Discharger to distribute flow evenly through the field and to alternate loading and rest periods.

Aside from sludge buildup over time in the lagoons, the Facility does not generate or handle solids other than what is removed manually from the headworks. An estimated 15 cubic yards of debris is removed from the headworks annually. Solids are hauled to a landfill.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 28, T40N, R4W, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point No. 001 to the Sacramento River, a water of the United States at a point latitude 41°16'35.18" N and longitude 122°19'6.98" W. The discharge point is approximately 0.6 miles downstream of Box Canyon Dam.
3. Treated municipal wastewater may also be discharged at Reclamation Point REC-001 to the Mt. Shasta Resort Golf Course as recycled water at latitude 41°16'59.16" N and longitude 122°19'7.80" W.
4. Treated municipal wastewater may also be discharged at Land Discharge Point LND-001 to the subsurface leachfield south of Highway 89 at latitude 41°17'8.34" N and longitude 122°16'24.65" W. The leachfield is on USFS property and is located approximately 3 miles east of the Facility and the Sacramento River.
5. Separate effluent limitations apply to discharges at each of the three discharge points above.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations and Discharge Specifications contained in Order No. R5-2007-0056 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001), Discharge Point No. 002 (Monitoring Location LND-001), and Discharge Point No. 003 (Monitoring Location REC-001) and representative monitoring data from the term of Order No. R5-2007-0056 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (2007 - 2011)	
		Average Monthly	Average Weekly	Maximum Daily	Average	Maximum Daily
pH	s.u.			6.0 – 9.0 ⁷	6.9	6.1 – 8.0
Settleable Solids	mL/L – Hr.	0.1	--	0.2	0.05	0.05
EC	µmhos/cm	700	--	--	340	454
BOD ₅ (winter ⁴)	mg/L	30	45	60	11.8	49.8
	lbs/day	200	300	400	93.5	320
BOD ₅ (shoulder ⁵)	mg/L	10	15	30	3.1	8
	lbs/day	67	100	200	15.6	37

Parameter	Units	Effluent Limitation			Monitoring Data (2007 - 2011)	
		Average Monthly	Average Weekly	Maximum Daily	Average	Maximum Daily
TSS (winter ⁴)	mg/L	30	45	60	11.9	26.5
	lbs/day	200	300	400	93.8	334
TSS (shoulder ⁵)	mg/L	10	15	30	4.3	8.5
	lbs/day	67	100	200	20.1	36
Ammonia	mg/L	3.68	--	29.57 ²	10.5	18.10
4,4'-DDT	µg/L	0.00059	--	0.00118	<0.002	<0.002
Copper, Total Recoverable	µg/L	3.94	--	7.9	6.72	32
Zinc, Total Recoverable	µg/L	10.76	--	21.58	11.95	47.6
Total Residual Chlorine	mg/L	--	0.01 ¹	0.02 ²	<0.02	1.46
Total Coliform Organisms	MPN/ 100 mL	--	23 ³	240	2.65	30
Average Dry Weather Flow	mgd	--	--	0.80	0.87 ⁶	2.61 ⁶
Turbidity (shoulder ⁵)		--	5.0	10.0	2.3	4.1

1 . 4-day average.

2 . 1-hour average.

3 . Weekly median.

4 . Winter period only (16 November through 14 April).

5 . Shoulder period only (15 April through 14 June and 16 September through 15 November).

6 . No discharge to receiving water during summer period, value represents entire discharge to surface water period.

7 Instantaneous minimum and maximum

Table F-3. Historic Land Discharge Specifications and Monitoring Data

Parameter	Units	Land Discharge Specification			Monitoring Data (2007 - 2010)	
		Average Monthly	Average Weekly	Maximum Daily	Average	Maximum Daily
Settleable Solids	mL/L – Hr.	0.1	--	0.2	n/a ²	n/a ²
BOD ₅	mg/L	30	45	60	9.25	30.0
TSS	mg/L	30	45	60	8.8	27.0
Total Coliform Organisms	MPN/ 100 mL	--	23 ¹	240	2 ^{2,7}	99 ²
Average Dry Weather Flow	mgd	--	--	0.70	0.53 59 mg ⁵ 92 mg ⁶	0.865 ⁴

¹ Weekly median.

² Order No. R5-2007-0056 did not contain land discharge monitoring requirements for total coliform organisms.

³ See historic effluent monitoring summary table.

⁴ April 2010.

⁵ Annual discharge volume average (million gallons).

⁶ Maximum annual volume (million gallons).

⁷ Median of the data set.

Table F-4. Historic Reclamation Discharge Specifications and Monitoring Data

Parameter	Units	Reclamation Discharge Specification			Monitoring Data (From Jan. 2007 To June 2011)	
		Average Monthly	Average Weekly	Maximum Daily	Average	Maximum Daily
pH	s.u.	--	--	6.0 – 9.0 ¹	6.14	4.5 – 7.3 ⁵
BOD ₅	mg/L	10	15	30	4.0	5.6
TSS	mg/L	10	15	30	5.9	8.0
% BOD ₅ and TSS Removal	%	85	--	--	n/a ⁶	n/a ⁶
Total Coliform Organisms	MPN/100 mL	2.2 ²	--	23	4 ⁷	99
Average Dry Weather Flow	mgd	--	--	0.80	0.54	0.75
Acute Toxicity, 96-hour static bioassay using Rainbow Trout	% Survival	--	--	70 – 90 ³	n/a ⁶	n/a ⁶
Turbidity	NTU	--	5 ⁴	10	3.2	5.0

¹ Instantaneous minimum and maximum.

² Monthly median.

³ The minimum survival for any one bioassay shall be no less than 70%, the median for any three or more consecutive bioassays shall be no less than 90%.

⁴ Weekly average

⁵ Minimum and maximum observed pH.

⁶ Order No. R5-2007-0056 did not contain reclamation discharge monitoring requirements.

⁷ Median of the data set.

D. Compliance Summary

Order R5-2007-0056 contained final new effluent limitations for copper, zinc, ammonia, and 4-4'-DDT which the Discharger could not meet. Interim limitations for these parameters and associated compliance schedules were established upon adoption of Order R5-2007-0056 and Cease and Desist Order R5-2007-0057 on 21 June 2007. After additional monitoring during the permit term, it was determined that 4-4'-DDT was not present in the effluent in detectable amounts.

The interim limitations for copper, zinc, and ammonia expired 18 May 2010. However, the Discharger was unable to meet the final effluent limitations at that time. Subsequently, Cease and Desist Order R5-2010-0064 was adopted on 27 May 2010 which provided new interim limitations for copper, zinc, and ammonia and compliance schedules for each parameter. Cease and Desist Order R5-2010-0064 expired on 1 June 2012. The Discharger conducted a mixing zone study in October 2009 and is requesting mixing zones and dilution credits for the subject parameters.

The Discharger has a history of effluent and discharge specification violations for all three discharge locations (receiving water, reclamation/golf course, and leachfield).

Effluent limitation violations for total chlorine residual occurred in February 2008, March 2011, and November 2011. In 2009 the Discharger refurbished the continuous sulfur dioxide analyzer; however the system is unreliable and has ongoing issues. The discharge has also exceeded the average monthly total recoverable zinc limitation

(March 2009) and a weekly BOD₅ limitation for the winter period discharge (November 2010).

Effluent discharged for reclamation (golf course) has exceeded reclamation specifications for total coliform organisms and pH. Total coliform organism reclamation specifications were exceeded in August 2008 and August 2010. In August, September, and October 2010, the discharge to the golf course was below the minimum pH limit of 6.0 s.u. on 10 occasions.

Effluent discharge to the leachfield has exceeded the land discharge specification flow limitation of 0.7 mgd on numerous occasions (approximately 36 daily violations between January 2010 and June 2011).

During the past permit cycle, the Discharger has heavily relied on the ability to discharge effluent to the leachfield that otherwise would have exceeded effluent limitations or reclamation specifications. These discharges to the leachfield have essentially masked treatment or effluent-quality problems at the Facility that normally would have been identified through the violations that would have occurred if the effluent was discharged to the river or the golf course.

Order No. R5-2007-0056 did not contain a discharge specification that limited the period of time or number of days per year to which discharges to the leachfield were allowed, the previous Order only specified an average annual discharge flow limitation of 0.7 mgd. Historically, the leachfield was only used for disposal between 1 May and 15 November (6.5 months), as effluent discharge to surface water was prohibited during this time period³. In 2001, reliance on the leachfield was reduced as the surface water discharge prohibition period was reduced to 14 June through 14 September (3 months). Facility improvements in early 2000 allowed the Discharger to produce recycled water for the Mt. Shasta Golf course for use predominately in the summer months and discharge higher quality effluent during the “new” fall and spring surface water discharge periods⁴. Order No. R5-2007-0056 references the leachfield discharges only occurring in the summer period and when the golf course does not utilize the recycled water. In addition, Order No. R5-2007-0056 states the usage of the leachfield had been considerably reduced over the past permit cycle after the Facility began discharging treated recycled water to Mt. Shasta Golf Resort. Order No. R5-2007-0056 states the annual average number of days treated effluent is pumped to the leachfield is less than 20 days. The Discharger sent treated effluent to the leachfield 222 days over a 12 month period in 2011.

E. Planned Changes

The Discharger has acknowledged that improvements and updates to the Facility are needed in order to meet water quality standards. The ROWD considers potential upgrades to the existing lagoon system in order to produce a “higher level of treatment.” These improvements and upgrades include year-round filtration and a

³ WDR Order No. 96-038.

⁴ WDR Order No. 5-01-218.

possible conversion from a lagoon-treatment system to a packaged activated sludge treatment plant. However, there are currently no formal proposals, plans, and/or secured funding for any “higher level of treatment” improvements.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

A. Legal Authorities

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (Water Code) as specified in the Finding contained at section II.C of this Order.

B. California Environmental Quality Act (CEQA)

This Order meets the requirements of CEQA as specified in the Finding contained at section II.E of this Order.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** This Order implements the following water quality control plans as specified in the Finding contained at section II.H of this Order.
 - a. *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (Basin Plan)*
2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.
3. **State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.I of this Order.
4. **Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.
5. **Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Resources Control Board (State Water Board) Resolution 68-16.
6. **Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.M of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

7. Emergency Planning and Community Right to Know Act

Section 13263.6(a) of the Water Code, requires that *“the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective”*.

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

8. Storm Water Requirements

USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations.

- 9. Endangered Species Act.** This Order is consistent with the Endangered Species Act as specified in the Finding contained at section II.P of this Order.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as *“...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application*

of appropriate limitations for point sources (40 CFR Part 130, et seq.).” The Basin Plan also states, “*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*” The Sacramento River (Box Canyon Dam to Shasta Lake) is not listed as a WQLS in the 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. The Sacramento River (Box Canyon Dam to Shasta Lake) is not listed as a WQLS in the 303(d) list of impaired water bodies, therefore no TMDLs are scheduled for development on this water body.

E. Other Plans, Policies and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
 - a. The waste consists primarily of domestic sewage and treated effluent;
 - b. The waste discharge requirements are consistent with water quality objectives; and
 - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
2. The State Water Resources Control Board adopted Resolution 2009-0011, “Policy for Water Quality Control for Recycled Water,” (Recycled Water Policy) on 3 February 2009. Section 4 of the Recycled Water Policy, Mandate for the Use of Recycled Water, paragraph a(2) states, “Agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities.” The Central Valley Water Board adopted a similar resolution, Resolution No. R5-2009-0028, “Resolution in Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants,” on 23 April 2009.

This Order requires the Discharger to recycle its treated wastewater to the maximum extent practicable. The Discharger is not expected to shoulder the entire cost of providing recycled wastewater, however some incremental cost to the City is warranted if a recycled water project is practicable, and the user is willing to pay its fair share of the incremental costs associated with producing, transporting and using the recycled water.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that *“are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.”* Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that *“[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”*

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, *“Policy for Application of Water Quality Objectives,”* that specifies that the Central Valley Water Board *“will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.”* This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA’s published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board’s *“Policy for Application of Water Quality Objectives”*)(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: *“All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.”* (Basin Plan at III-8.00) The Basin Plan states that material

and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, “...*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*” in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: “*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*”

A. Discharge Prohibitions

- 1. Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.
- 2. Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board’s prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.
- 3. Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance
- 4. Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility’s systems).** This prohibition is based on CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities
- 5. Prohibition III.E (The discharge of wastewater to the Sacramento River during 15 June through 14 September is prohibited).** Order No. R5-2007-0056 included the discharge prohibition of no discharge during the recreation season (15 June through 14 September).

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133.

Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

- a. BOD₅ and TSS.** Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD₅ and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD₅ and TSS are based on the technical capability of the tertiary process. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD₅ and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD₅ and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD₅ and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD₅ and TSS than the secondary standards currently prescribed; the 30-day average BOD₅ and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD₅ and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. In addition, 40 CFR 133.102, in describing

the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD₅ and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD₅ and TSS over each calendar month. This Order requires Water Quality Based Effluent Limitations (WQBELs) that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133. (See section IV.C.3.d of this Attachment for the discussion on Pathogens which includes WQBELs for BOD₅ and TSS.)

- b. Flow.** The Facility was designed to provide a tertiary (advanced secondary) level of treatment for up to a design flow of 0.80 mgd. Therefore, this Order contains an average dry weather discharge flow effluent limit of 0.80 mgd.
- c. pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units.

Summary of Technology-based Effluent Limitations Discharge Point No. EFF-001

Table F-5. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD ₅	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
pH	Standard Units	--	--	--	6.0	9.0
Average Dry Weather Flow	mgd	--	--	0.80 ²	--	--

¹ Based on average dry weather flow of 0.80 mgd.

² Average daily maximum.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements or other provisions, is discussed in section IV.C.3 of this Fact Sheet.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: *"Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning..."* and with respect to disposal of wastewaters states that *"...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."*

The federal CWA section 101(a)(2), states: *"it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983."* Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no

case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. Receiving Water and Beneficial Uses. Beneficial uses applicable to the Sacramento River (Box Canyon Dam to Shasta Lake) are as follows:

Table F-6. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
EFF-001	Sacramento River (Box Canyon Dam to Shasta Lake)	<u>Existing:</u> Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Cold freshwater habitat (COLD); Spawning, reproduction, and/or early development, cold (SPWN); and Wildlife habitat (WILD)
REC-001 LND-001	Underlying Groundwater	<u>Potential:</u> Municipal and domestic supply (MUN) Industrial service supply (IND), Industrial process supply (PRO), and Agricultural supply (AGR)

Most of the water in the upper Sacramento River and its tributaries is derived from snowmelt; as a result, the water in the system is relatively pure and low in dissolved minerals. The Facility is the first point-source municipal effluent discharge in the watershed. The upper Sacramento River is promoted as an excellent recreational fishing waterway, based primarily around salmonids, and specifically rainbow trout. Fishing is allowed year-round in the mainstem of the river from Box Canyon to Shasta Lake, with several fishing events and tournaments occurring throughout the year in the local area⁵. The discharge is located in an area reserved for “catch and release” fishing only and the outfall is located within one mile upstream of a California Department of Fish and Game Wildlife Area which provides access to year-round fishing. The discharge location is also within a segment of river used for recreational boating, specifically, whitewater kayaking. Whitewater kayaking is present year-round, on days when releases from Box Canyon Dam are greater than or equal to approximately 400 cfs⁶.

b. Effluent and Ambient Background Data. The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from January 2007 through June 2011, which includes effluent and ambient

⁵ Upper Sacramento River Watershed Assessment, June 2010

⁶ Holbek, Lars and Chuck Stanley. The Best Whitewater in California. 3rd ed. Coloma, CA: Watershed Books, 1998.
Cassady, Jim and Fryar Calhoun. California Whitewater. 3rd ed., Berkeley, CA: North Fork Press, 1995.

Sacramento River (Box Canyon). Retrieved 28 Aug 2012, from <http://www.awetstate.com/SacBox.html>.

Box Canyon of the Sacramento. Retrieved 28 Aug 2012, from <http://www.kayakphoto.com/darinmcquoid/boxcanyonsac.html>.

background data submitted in SMRs and the Report of Waste Discharge (ROWD).

- c. Assimilative Capacity/Mixing Zone.** The Discharger has requested mixing zones and dilution credits for compliance with acute and chronic aquatic life water quality criteria, and human carcinogen water quality criteria. The Central Valley Water Board has discretion to accept or deny mixing zones and dilution credits. The CWA directs states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR section 122.44 and section 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the USEPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (TSD).

The TSD defines a mixing zone as follows, “...a mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.”⁷ The SIP provides guidance on mixing zones and dilution credits in establishing water quality-based effluent limitations. Water quality criteria and objectives must be met throughout a water body except within a mixing zone. **All mixing zones shall be as small as practicable and must meet specific conditions.**

The allowance of mixing zones by the Central Valley Water Board is discretionary and can be granted parameter-by-parameter and/or type of criteria (e.g., acute or chronic aquatic life criteria). The allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, Policy for Application of Water Quality Objectives, which states in part, “*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be*

⁷ TDS Glossary

limited to a small zone of initial dilution in the immediate vicinity of the discharge.”⁸

Section 1.4.2 of the SIP states, in part, “...with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers ... The applicable priority pollutant criteria and objectives are to be met throughout a water body except within any mixing zone granted by the Regional Board. The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis. The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board.”⁹

Both federal and state guidance include similar mixing zone conditions, the SIP conditions are as follows:

“A mixing zone shall be as small as practicable. The following conditions must be met in allowing a mixing zone:

A mixing zone shall not:

- 1. Compromise the integrity of the entire water body.*
- 2. Cause acutely toxic conditions to aquatic life passing through the mixing zone.*
- 3. Restrict passage of aquatic life.*
- 4. Adversely impact biologically sensitive or critical habitats, including but not limited to, habitat of species listed under Federal or State endangered species laws;*
- 5. Produce undesirable or nuisance aquatic life;*
- 6. Result in floating debris, oil, or scum;*
- 7. Produce objectionable color, odor, taste, or turbidity;*
- 8. Cause objectionable bottom deposits;*
- 9. Cause nuisance;*
- 10. Dominate the receiving water body or overlap a mixing zone from a different outfall;*
- 11. Be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy.”¹⁰*

⁸ Basin Plan, page IV-16.00

⁹ SIP, page 15

¹⁰ SIP, page 17

The mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives, but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

- iii. **Sacramento River Hydrology.** The discharge location is less than one mile downstream of Box Canyon Dam and approximately 40 miles upstream of Shasta Lake. Shasta Dam and Box Canyon Dam and the reservoirs created by them are the most prominent water supply/flood control features present in the watershed. The Sacramento River watershed upstream from Shasta Lake has an area of about 6,420 square miles. Approximately 50 percent of the watershed is located above 3,000 feet and, as a result, snowfall and snowpack are major influences on the hydrologic cycle of the area¹¹. Lake Siskiyou (created by Box Canyon Dam in 1968 for purposes of hydroelectric power production) is a 430-acre reservoir with source water derived primarily from snowmelt. Recreation is a primary use of Lake Siskiyou and lake levels are maintained at or near full year-round. However, Siskiyou County Flood Control and Water Conservation District (owner and operator of Box Canyon Dam) is mandated to maintain a minimum outflow discharge rate of 40 cfs from Box Canyon Dam. There are no major tributaries adding to the flow between Box Canyon Dam and the Facility outfall, therefore historic flow releases from Box Canyon Dam have been used to quantify receiving water flows at the discharge point.

The Facility does not discharge to the Sacramento River during the summer, which Order R5-2007-0056 refers to as the “recreation season” and defines as 15 June through 14 September. Effluent is therefore discharged to the receiving water between 15 September and 14 June, however, Order R5-2007-0056 applied advanced secondary treatment standards to the fall and spring discharge period and secondary treatment standards to the winter period discharge. Receiving water flow statistics in Table F-7 have been calculated for the three specific discharge to surface water periods, as they were defined in Order R5-2007-0056.

Table F-7. Critical Receiving Water Flow (cfs)

Season	1Q10 ¹	7Q10 ²	Harmonic Mean ³
Fall (15 September through 15 November)	41	41	45
Winter (16 November through 14 April)	42	42	115
Spring (15 April through 14 June)	44	45	256
Full Surface Water Discharge Period (Average)	--	--	139

¹¹ Upper Sacramento River Watershed Assessment, June 2010

(15 September through 14 June)			
1.	Lowest daily average flow with a return frequency of 10 years.		
2.	Lowest 7-day average flow with a return frequency of 10 years.		
3.	Box Canyon Dam flow data (August 1998 – September 2009).		

The fall period is the lowest receiving water flow period, with a calculated 1Q10 of 41 cfs and a harmonic mean flow of 45 cfs. However, all three historic effluent discharge periods have a receiving water critical low flow value in a range between 41 and 45 cfs. Average peak receiving water flows of 2000 cfs are typically observed for a short period of time in late spring (i.e. April and/or May) and periodically observed in the winter.

- iv. **Dilution Ratios.** Before establishing a mixing zone and a dilution credit for a discharge, it must first be determined if and how much (if any), receiving water is available to dilute the discharge. In determining the appropriate available receiving water flow, the Regional Board may take into account actual and seasonal variations of the receiving water and the effluent. For example, the Regional Board may prohibit mixing zones during seasonal low flows and allow them during seasonal high flows. However, for year-round mixing zones, the mixing zone and dilution credit shall be determined using the parameters specified in Table F-8, below.

Table F-8. Effluent and Receiving Water Flows for Calculating Dilution Ratios

In calculating a dilution ratio for:	Use the critical receiving water flow of:	Use the discharged effluent flow of:
Acute aquatic life criteria/objective	1Q10	Maximum daily flow during period of discharge
Chronic aquatic life criteria/objective	7Q10	Four-day average of daily maximum flows during period of discharge
Human health criteria/objective	Harmonic mean	Long-term average during period of discharge

For completely-mixed¹² discharges, the amount of receiving water available to dilute the effluent may be determined by calculating the dilution ratio using the flows in Table F-8, above. The Regional Board cannot grant a dilution credit that is greater than the calculated dilution ratio. Site-specific conditions concerning the discharge and the receiving water may also justify a smaller dilution credit for completely-mixed discharges, as well. For incompletely-mixed discharges, dilution credits and mixing zones may be considered by the Regional Board only after the Discharger has completed an independent mixing zone study and demonstrated to the satisfaction of the Regional Board that a dilution credit is appropriate. Dilution credits for incompletely-mixed discharges, inherently, cannot be greater than the calculated dilution ratios from the flows values in Table F-8, as well.

¹² Per the SIP, completely mixed discharges are defined as “not more than 5 percent difference, accounting for analytical variability, in the concentration of a pollutant across a transect of the water body at a point within two stream/river widths from the discharge point.”

Tables F-9, F-10, and F-11 below provide the calculated dilution ratios for the applicable acute, chronic, and human health objective/criteria, respectively. The tables provide the receiving water and effluent flow rates for each historic discharge season and the applicable flow values for the entire effluent discharge period (fall, winter, and spring). A year-round mixing zone requires analyzing the dilution ratios for the entire effluent discharge period.

Table F-9. Calculated Dilution Ratios for Acute Criteria

Season	Receiving Water 1Q10 (cfs)	Effluent 1-Day Max (mgd)	Dilution Ratio
Fall (16 September - 15 November)	41	0.96	27:1
Winter (16 November – 14 April)	42	2.3	12:1
Spring (15 April – 14 June)	44	2.1	14:1
Full Discharge Period (16 September through 14 June)	41	2.3	11:1

Table F-10. Calculated Dilution Ratios for Chronic Criteria

Season	Receiving Water 7Q10 (cfs)	Effluent 4-Day Average Max (mgd)	Dilution Ratio
Fall (16 September - 15 November)	41	0.96	27:1
Winter (16 November – 14 April)	42	2.2	12:1
Spring (15 April – 14 June)	45	2.0	15:1
Full Discharge Period (16 September through 14 June)	41	2.2	12:1

Table F-11. Calculated Dilution Ratios for Human Health Criteria

Season	Receiving Water Harmonic Mean (cfs)	Long-term Average (mgd)	Dilution Ratio
Fall (16 September - 15 November)	45	0.5	57:1
Winter (16 November – 14 April)	115	0.98	76:1
Spring (15 April – 14 June)	256	0.62	266:1
Full Discharge Period (16 September through 14 June)	45	0.98	30:1

The Regional Board cannot grant a dilution credit that is greater than the calculated dilution ratio. Therefore, based on the data summarized in Tables F-9, F-10, and F-11, year-round dilution credits for acute aquatic-life, chronic aquatic-life, and human health criteria cannot be larger than

11:1, 12:1, and 30:1, respectively. These dilution ratios represent allocating the entire assimilative capacity of the localized river segment.

Analyses of the seasonal dilution ratios show no significant difference between the winter and spring seasons flow ratios for both acute and chronic aquatic life criteria. Further, all three seasons share the same receiving water critical low flow value of approximately 40 cfs (the minimum mandated Box Canyon Dam release value). The fall season has larger acute and chronic-life criteria dilution ratios than the winter and spring as a result of the observed peak effluent discharge rate during the fall being half the equivalent value for the winter and spring season.

- v. **Mixing Zone Study Results.** The Discharger conducted a Mixing Zone Study (Study) in October 2009. The Study included a tracer-dye study with instream monitoring to characterize the extent of the actual dilution. The Study was conducted during a receiving water flow of 47 cfs and an effluent flow of approximately 0.5 mgd. Field-obtained dilution credits were adjusted linearly and reduced to account for the critical flow regimes as outline in Table F-8, above.

The Study found that the discharge is not a completely-mixed discharge. The river width at the diffuser is approximately 35 feet. Measurements taken at 75 feet downstream of the diffuser indicated the dye plume covered approximately 60 percent of the river width. The dye plume was observed to be covering 100 percent of the river width at 100 feet downstream of the diffuser, however, the concentration of the dye varied by more than 5 percent throughout the width of the transect. The furthest downstream measured transect was at 400 feet, however, complete mixing was also not observed at this transect.

Calculated dilution credits, as presented in the 2009 Mixing Zone Study, for the 75-foot downstream transect are provided in Table F-12. The Study presented seasonal calculated dilution credits. Measurements were not taken between 0 and 75 feet downstream of the discharge and the dye plume was observed to be covering 100 percent of the river at 100 feet downstream.

Table F-12. Mixing Zone Study Dilution Credits Comparison to Dilution Ratios

	Mixing Zone Study Results		Maximum "Available" Dilution Ratio	
	@Diffuser	Dilution Credit @75-feet downstream	Dilution Ratio ¹ (seasonal)	Dilution Ratio ¹ (Entire Discharge Period ²)
Acute				
Fall	1	8	27:1	11:1
Winter	0	3	12:1	
Spring	0	4	14:1	
Chronic				
Fall	1	8	27:1	12:1
Winter	0	4	12:1	
Spring	0	4	15:1	
Human Health				
Fall	1	17	57:1	30:1
Winter	2	22	76:1	
Spring	7	77	266:1	

¹ Based on parameters outlined in Table F-8.

² Dilution ratio for entire discharge period (fall, winter, spring).

The Discharger also performed a biological assessment of the mixing zone and submitted the findings (Biological Assessment of the City of Mt. Shasta Wastewater Treatment Plant Mixing Zone, November 2009) to California Department of Fish and Game (DFG) for review and comment. DFG found the biological assessment to be adequate for trustee purposes.

- vi. **Evaluation of Available Dilution for Acute Aquatic Life Criteria.** USEPA Region VIII, in its "EPA Region VIII Mixing Zones and Dilution Policy", recommends no dilution for acute aquatic life criteria, stating the following, *"In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone."*¹³ The Discharger has requested an acute mixing zone for compliance with acute water quality criteria for ammonia, copper, and zinc.

The Discharger has requested year-round acute aquatic-life dilution credits of 15, 20, and 18 for copper, zinc, and ammonia, respectively. The specific values were requested in order to obtain water quality-based effluent limitations that the Discharger could meet based on past Facility performance. The maximum available year-round acute dilution credit legally available at this site location is 11:1 (which represents allocating the entire assimilative capacity of the localized river segment). The Discharger's requested dilution credits are greater than the maximum

¹³ USEPA Region VIII Mixing Zones and Dilution Policy, December 1994 (Updated September 1995), (page 18)

available, therefore they cannot be considered for analysis.

Seasonal dilution credits and/or a dilution credit less than the maximum available credit, however, may be considered by the Regional Board. The receiving water to effluent flow regimes in the winter and spring are not significantly different from each other and the fall period experiences the lowest receiving water flows on average, therefore, seasonal dilution credits are not considered appropriate for further analysis at this time.

For the purpose of evaluating available dilution for acute aquatic-life criteria, a mixing zone length of 75 feet downstream of the diffuser was chosen for evaluation, as this distance was the only downstream transect from the Study that did not have dye observed across the entire width of the receiving water. Since the Discharger requested year-round dilution credits, the smallest dilution available between the three seasons was chosen as a conservative approach to analysis.

The Study reports that a mixing zone of 75 feet downstream of the diffuser (at a width of approximately 24 feet) results in an acute aquatic-life criteria dilution credit of 3. A dilution credit of 3 does not provide the Discharger with a water quality-based effluent limitation for copper, zinc, and ammonia that the Facility can reliably meet based on historic plant performance. However, a 75-foot acute mixing zone has been examined for the purpose of compliance determination with the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, “If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.”¹⁴ The discharge is one of only two municipal wastewater treatment facility outfalls in 40 river miles. The river width at the outfall is approximately 40 feet wide and the acute mixing zone is approximately 24 feet wide by 75 feet in length, allowing for a 16-foot zone-free passage on the west side of the river. Therefore, the total area affected is small compared to the total area of the waterbody and the acute mixing zone is likely to have little effect on the integrity of the waterbody as a whole.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* –This Order requires acute bioassays to be conducted using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute mixing zone do not occur.

¹⁴ TSD, pg. 33

(3) *Shall not restrict the passage of aquatic life* – The acute mixing zone length is 75 feet downstream from the diffuser. The width of the river is approximately 40 feet at the 75 foot transect location and the mixing zone is 60 percent of the river width at this location. Therefore, the mixing zone is approximately 24 feet wide at the 75-foot transect which allows for a 16-foot aquatic life passage on the west side of the river. Therefore, the acute mixing zone does not restrict the passage of aquatic life.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute mixing zone do not occur. Furthermore, the acute mixing zone will not cause acutely toxic conditions, allows adequate zones of passage and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The acute mixing zone was for select parameters with aquatic toxicity criteria and objectives (copper, zinc, and ammonia) none of which should cause floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; or cause objectionable bottom deposits; or cause a nuisance. Furthermore, this Order requires end-of-pipe effluent limitations for BOD₅ and TSS and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring is included to detect any problems.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The acute mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. The only other outfall and/or mixing zone in the 40-mile river segment is approximately 10 miles downstream of the Discharger's outfall.

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the acute mixing zone. There are no known downstream drinking water intakes between the discharge and Shasta Lake, 40 miles downstream.

The acute mixing zone of 75 feet for the subject parameters complies with the SIP and the Basin Plan; and an acute dilution credit of 3:1 for acute aquatic-life criteria for copper, zinc, and ammonia have been granted for the discharge and the Central Valley Water Board has used an acute aquatic life mixing zone of approximately 75 feet (length) by 24 feet (width) for calculating effluent limits for copper and zinc.

- v. Evaluation of Available Dilution for Chronic Aquatic Life Criteria.** The chronic aquatic life mixing zone is sized to protect the water body as a whole and is generally larger than the acute mixing zone. The Discharger has requested a chronic mixing zone for compliance with chronic aquatic-life water quality criteria for copper, zinc, and ammonia.

The Discharger has requested year-round chronic aquatic-life dilution credits of 15, 20, and 18 for copper, zinc, and ammonia, respectively. The specific values were requested in order to obtain water quality-based effluent limitations that the Discharger could meet based on past Facility performance. The maximum available year-round chronic dilution credit legally available at this site location is 12:1 (which represents allocating the entire assimilative capacity of the localized river segment). The Discharger's requested dilution credits are greater than the maximum available, therefore they cannot be considered for analysis.

Seasonal dilution credits and/or a dilution credit less than the maximum available credit, however, may be considered by the Regional Board. The receiving water to effluent flow regimes in the winter and spring are not significantly different from each other and the fall period experiences the lowest receiving water flows on average, therefore, seasonal dilution credits are not considered appropriate for further analysis at this time.

For the purpose of evaluating available dilution for chronic aquatic-life criteria, a mixing zone length of 75 feet downstream of the diffuser was chosen for evaluation as this distance was the only downstream transect that did not have dye observed across the entire width of the river. Since the Discharger requested year-round dilution credits, the smallest dilution available between the three seasons was chosen as a conservative approach to analysis.

The Study reports that a mixing zone of 75 feet downstream of the diffuser (at a width of 24 feet) results in a chronic aquatic-life criteria dilution credit of 4. A dilution credit of 4:1 does not provide the Discharger with a water quality-based effluent limitation for copper, zinc, and ammonia that the Facility can reliably meet, based on past Facility performance. However, the 75-foot mixing zone has been examined for the purpose of compliance with the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats."¹⁵ The discharge is one of

¹⁵ TSD, pg. 33

only two municipal wastewater treatment facility outfalls in 40 river miles. The river width at the outfall is approximately 40 feet wide and the chronic mixing zone is approximately 24 feet wide by 75 feet in length, allowing for a 16 feet zone-free passage on the west side of the river. Therefore, the total area affected is small compared to the total area of a waterbody and the chronic mixing zone is likely to have little effect on the integrity of the waterbody as a whole.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The chronic mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur.

(3) *Shall not restrict the passage of aquatic life* – The chronic mixing zone length is 75 feet downstream from the diffuser. The width of the river is approximately 40 feet at the 75 feet transect location and the mixing zone is 60 percent of the river width at this location. Therefore, the chronic mixing zone is approximately 24 feet wide and allows for a 16 foot aquatic life passage on the west side of the river. Therefore, the chronic mixing zone does not restrict the passage of aquatic life..

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The chronic mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur. Furthermore, the chronic mixing zone will not cause acutely toxic conditions, allows adequate zones of passage and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The chronic mixing zone was for select aquatic toxicity criteria and objectives (copper, zinc, and ammonia) none of which should cause floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; or cause objectionable bottom deposits; or cause a nuisance. Furthermore, this Order requires end-of-pipe effluent limitations for BOD₅ and TSS and discharge prohibitions to prevent these conditions from occurring. Receiving water monitoring is included to detect any problems.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The chronic mixing zone is small relative to the

water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. The only other outfall and/or mixing zone in the 40-mile river segment is approximately 10 miles downstream of the Discharger's outfall.

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone. There are no known downstream drinking water intakes between the discharge and Shasta Lake, 40 miles downstream.

The chronic mixing zone of 75 feet for the subject parameters complies with the SIP and the Basin Plan; and an chronic dilution credit of 4:1 for chronic aquatic-life criteria for copper, zinc, and ammonia have been granted for the discharge and the Central Valley Water Board has used an chronic aquatic life mixing zone of approximately 75 feet (length) by 24 feet (width) for calculating effluent limits for copper and zinc.

- vi. **Evaluation of Available Dilution for Human Health Criteria.** Human health-based criteria are generally based long-term exposures, such as safe levels for lifetime exposure (e.g., for carcinogens, consumption of 1 liter/day for 70 years) and the mixing zones typically extend beyond the near-field mixing zone. The Discharger has requested a human health mixing zone for compliance with human carcinogen criteria for bis (2-ethylhexyl) phthalate and dichlorobromomethane.

The Discharger has requested a human health dilution credit of 2 for both bis (2-ethylhexyl) phthalate and dichlorobromomethane. The Mixing Zone Study reports that a dilution credit of 2 results in a mixing zone size of approximately 17 feet downstream of the discharge for the fall, winter, and spring discharge periods. The width of the mixing zone at 17 feet downstream of the discharge is approximately 10 feet. The ultimate human health dilution ratio for the entire surface water discharge period is 30:1.

The proposed carcinogen mixing zone meets the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats."¹⁶ The Sacramento River is a large waterbody and the human health mixing zone is not applicable to

¹⁶ TSD, pg. 33

aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire waterbody.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(3) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone. There are no known downstream drinking water intakes between the discharge and Shasta Lake, 40 miles downstream.

The human health mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 of the Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.

The Central Valley Water Board has used a human health mixing zone of approximately 17 feet (length) by 10 feet (width) for calculating effluent limits for bis (2-ethylhexyl) phthalate and dichlorobromomethane.

- d. Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.
- e. Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP¹⁷, the CTR¹⁸ and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)). The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body¹⁹. This ensures that effluent limitations are fully protective of aquatic life

¹⁷ The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

¹⁸ The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

¹⁹ All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without also changing the hardness.

in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. Conducting the Reasonable Potential Analysis (RPA). The SIP in Section 1.3 states, “The RWQCB shall...determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective.” Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the maximum effluent concentration Maximum Effluent Concentration (MEC) and maximum ambient background concentration Maximum Ambient Background Concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

- a) The SIP requires a WQBEL if the MEC exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the “fully mixed” reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas in the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream hardness is outlined in subsection ii, below.
- b) The SIP requires a WQBEL if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the Maximum Ambient Background Concentration of a pollutant exceeds the applicable criterion, adjusted for hardness²⁰. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

ii. Calculating Water Quality-Based Effluent Limitations. The remaining discussion in this section relates to the development of water quality-

²⁰ The pollutant must also be detected in the effluent.

based effluent limitations (WQBELs) limits when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

A 2006 Study²¹ developed procedures for calculating the effluent concentration allowance (ECA)²² for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR²³, is as follows:

$$\text{CTR Criterion} = \text{WER} \times (e^{m[\ln(H)]+b}) \quad (\text{Equation 1})$$

Where:

H = hardness (as CaCO₃)²⁴

WER = water-effect ratio

m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants “m” and “b” are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The equation for the ECA is defined in Section 1.4, Step 2, of the SIP and is as follows:

²¹ Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.

²² The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate water quality-based effluent limitations in accordance with Section 1.4 of the SIP

²³ 40 CFR § 131.38(b)(2).

²⁴ For this discussion, all hardness values are in mg/L as CaCO₃.

$$ECA = C \quad (\text{when } C \leq B)^{25} \quad (\text{Equation 2})$$

Where:

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)

B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as “Concave Down Metals”. “Concave Down” refers to the shape of the curve represented by the relationship between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as “Concave Up Metals”.

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc –

For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria²⁶. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)²⁷. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 39 mg/L to 67 mg/L, based on 16 samples from January 2007 through June 2011. The upstream receiving water hardness varied from 47 mg/L to 69 mg/L, based on 28 samples from January 2007 through June 2011, and the downstream receiving water hardness varied from 43 mg/L to 69 mg/L, during the same period. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 39 mg/L. As demonstrated in the

²⁵ The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e. C ≤ B)

²⁶ 2006 Study, p. 5700

²⁷ There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

example shown in Table F-13a, below, using this hardness to calculate the ECA for all Concave Down Metals will result in water quality-based effluent limitations that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 47 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

Using these reasonable worst-case receiving water conditions, a simple mass balance (as shown in Equation 3, below) accounts for all possible mixtures of effluent and receiving water under all flow conditions.

$$C_{MIX} = C_{RW} \times (1-EF) + C_{Eff} \times (EF) \quad \text{(Equation 3)}$$

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)
 C_{RW} = Upstream receiving water concentration
 C_{Eff} = Effluent concentration
EF = Effluent Fraction

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria.²⁸.

²⁸ This method considers the actual lowest upstream hardness and actual lowest effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-13a demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

Table F-13a: Copper ECA Evaluation

Lowest Observed Effluent Hardness		39mg/L (as CaCO ₃)			
Lowest Observed Upstream Receiving Water Hardness		47 mg/L (as CaCO ₃)			
Highest Assumed Upstream Receiving Water Copper Concentration		4.89 µg/L ¹			
Copper ECA _{chronic} ²		4.17 µg/L			
Effluent Fraction ⁶		Fully Mixed Downstream Ambient Concentration			
		Hardness ³ (mg/L)	CTR Criteria ⁴ (µg/L)	Copper ⁵ (µg/L)	Complies with CTR Criteria
<div style="display: flex; align-items: center;"> <div style="text-align: center; margin-right: 10px;"> <p>High Flow</p> <p>Low Flow</p> </div> <div> <p>1%</p> <p>5%</p> <p>15%</p> <p>25%</p> <p>50%</p> <p>75%</p> <p>100%</p> </div> </div>	1%	46.9	4.89	4.89	Yes
	5%	46.6	4.86	4.86	Yes
	15%	45.8	4.79	4.79	Yes
	25%	45.0	4.72	4.71	Yes
	50%	43.0	4.54	4.53	Yes
	75%	41.0	4.35	4.35	Yes
	100%	39.0	4.17	4.17	Yes

¹ Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 47 mg/L.

² ECA calculated using Equation 1 for chronic criterion at a hardness of 39 mg/L.

³ Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.

⁴ Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

⁵ Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.

⁶ The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

ECA for Acute Cadmium, Lead, and Acute Silver – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This

replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-13b).

$$ECA = \left(\frac{m(H_e - H_{rw})(e^{m\{\ln(H_{rw})\}+b})}{H_{rw}} \right) + e^{m\{\ln(H_{rw})\}+b} \quad (\text{Equation 4})$$

Where:

m, b = criterion specific constants (from CTR)

H_e = lowest observed effluent hardness

H_{rw} = reasonable worst-case upstream receiving water hardness

In some instances, the receiving water may already contain concentrations of concave up metals that exceed water quality criteria associated with the hardness condition previous to the discharge. The 2006 study procedures remain applicable under these conditions. The discharge cannot cause or contribute to a violation of water quality criteria/objectives in the receiving water. Although metals concentrations downstream of the discharge exceed CTR criteria, the cause of the exceedance is not due to the discharge, it is due to the elevated metals concentrations upstream of the discharge. Implementing the procedures of the 2006 study does not result in an increase in toxicity downstream of the discharge, and in fact reduces the amount of toxicity already present in the receiving water. This is demonstrated in the example below for lead (see Table F-13b).


An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-13b, below. As previously mentioned, the lowest effluent hardness is 39 mg/L, while the upstream receiving water hardness ranged from 47 mg/L to 69 mg/L, and the downstream receiving water hardness ranged from 43 mg/L to 69 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 47 mg/L.

In this case for lead, the lowest possible fully-mixed downstream hardness is 39 mg/L (see last row of Table F-13b), which corresponds to a total recoverable chronic ECA of 1.0 µg/L, using Equations 1 and 2. However, a lower chronic ECA is required to ensure the discharge does not cause toxicity at any location in the receiving water, at or downstream of the discharge, which would be a violation the Basin Plan's narrative toxicity

objective²⁹. This is because for concave up metals, mixing two waters with different hardness with metals concentrations at their respective CTR criteria will always result in CTR criterion exceedances³⁰. As shown in Table F-13b, a chronic ECA of 1.0 µg/L is necessary to be protective under all discharge conditions. In this example for lead, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient lead concentration is in compliance with the CTR criteria.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in water quality-based effluent limitations that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-13b, for lead.

Table F-13b: Lead ECA Evaluation

Lowest Observed Effluent Hardness					39 mg/L
Reasonable Worst-case Upstream Receiving Water Hardness					47 mg/L
Reasonable Worst-case Upstream Receiving Water Lead Concentration					1.22 µg/L ¹
Lead ECA _{chronic} ²					1.0 µg/L
Effluent Fraction ⁶		Fully Mixed Downstream Ambient Concentration			
		Hardness ³ (mg/L) (as CaCO ₃)	CTR Criteria ⁴ (µg/L)	Lead ⁵ (µg/L)	Complies with CTR Criteria
 <div>High Flow</div> <div>Low Flow</div>	1%	46.9	1.2	1.2	Yes
	5%	46.6	1.2	1.2	Yes
	15%	45.8	1.2	1.2	Yes
	25%	45.0	1.2	1.2	Yes
	50%	43.0	1.1	1.1	Yes
	75%	41.0	1.0	1.0	Yes
	100%	39.0	1.0	1.0	Yes

¹ Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 47 mg/L.

² ECA calculated using Equation 4 for chronic criteria.

³ Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.

⁴ Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

⁵ Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.

⁶ The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

²⁹ "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan, p. III-8.01.)

³⁰ Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill. (p. 5702)

Based on the procedures discussed above, Table F-14 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-14. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)		
	Acute	Chronic	Basin Plan Instantaneous Maximum
Copper	4.17	5.77	5.72
Chromium III	--	95.72	--
Cadmium	1.56	1.18	0.22
Lead	24.5	1.0	--
Nickel	--	23.52	--
Silver	0.78	--	--
Zinc	53.95	53.95	16.02

3. Determining the Need for WQBELs

- a. The Central Valley Water Board conducted the reasonable potential analysis (RPA) in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.³¹ The SIP states in the introduction “*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*” Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.
- b. **Constituents with No Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

i. 4,4'-DDT

- (a) **WQO.** The CTR includes a 4,4'-DDT criterion of 0.00059 µg/L for the protection of human health for waters from which both water and organisms are consumed.

³¹ See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

(b) RPA Results. The maximum effluent concentration (MEC) for 4,4'-DDT was <0.002 µg/L (non-detect) in all 7 effluent samples collected between September 2007 and December 2010. The maximum observed upstream receiving water concentration <0.002 µg/L (non-detect) out of 4 samples collected between January 2009 and December 2010. The minimum quantifiable level for 4,4'-DDT required by the SIP is 0.01 µg/L. The detection limit for the subject samples were 0.002 µg/L, which is less than the minimum reporting levels required by the SIP. Therefore, 4,4'-DDT in the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

c. Constituents with Limited Data. Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. Aluminum has been included in this section due to the need for the development of an appropriate site-specific chronic aquatic-life criterion for this discharge. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.

i. Aluminum

(a) WQO. Aluminum is not a CTR constituent. The Basin Plan includes the narrative toxicity objective, which states that, *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."* (Basin Plan at III-8.00) The Basin Plan's *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, *"on a case-by case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective."* (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).).

The Central Valley Water Board considered all available material and relevant information submitted by the Discharger, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations, the USEPA National Recommended Ambient Water Quality Criteria (NAWQC) and supporting studies, National Recommended Water Quality Criteria-Correction and site-

specific aluminum studies conducted by other dischargers within the Central Valley Region in evaluating the appropriate criteria for protection of the beneficial uses to comply with the narrative toxicity objective.

USEPA developed the NAWQC for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. The NAWQC chronic aquatic life criterion of 87 µg/L is based on studies conducted under conditions with low pH (6.5 – 6.6) and low hardness (<10 mg/L as CaCO₃) to determine the effects on striped bass and brook trout. The USEPA secondary maximum contaminant level for protection of human health is 200 µg/L.

In April 1999, USEPA released the National Recommended Water Quality Criteria-Correction. There were no corrections to the 1988 aluminum recommended criteria; however, USEPA recognized that they were aware of field data indicating that many high quality waters of the U.S. contain more than 87 µg/L aluminum, when either total recoverable or dissolved is measured (i.e., the higher levels of aluminum did not affect beneficial uses). Information in Footnote L to the NAWQC Correction summary table for aluminum suggests the use of a WER may be appropriate in instances where water quality ambient conditions differ from those used by EPA.

Receiving water monitoring data demonstrates that NAWQC study conditions (low pH and low hardness) are not similar to those in the upper Sacramento River, which consistently has an upstream hardness concentrations ranging from 47 to 69 mg/L as CaCO₃ and the pH ranging from 6.7 to 8.4 s.u. However, the upper Sacramento River does support a large population of rainbow trout, and brook trout may be present in the watershed.

Site specific aluminum toxicity studies have also been conducted within the Central Valley Region. These studies were performed by dischargers for the purpose of evaluating the appropriate chronic aquatic life criterion for implementing the Basin Plan's narrative toxicity objective. The results of the Central Valley Region aluminum toxicity studies indicate that the NAWQC chronic criterion of 87 µg/L may be overly stringent for hardness ranging from 16 to 250 mg/L as CaCO₃.

Therefore, due to 1) the site-specific hardness and pH conditions being greater than the hardness conditions under which the NAWQC chronic criterion was developed, 2) the results of Central Valley Region aluminum toxicity studies, 3) the Discharger's chronic toxicity test (which showed no adverse effects at 100% effluent), and 4) the

Discharger's acute toxicity tests (which showed no adverse effects to rainbow trout at 100% effluent), the applicability of the NAWQC chronic criterion remains uncertain. For these reasons, the NAWQC chronic criterion of 87 µg/L has not been included in the Reasonable Potential Analysis at this time. This Order requires the Discharger to conduct a site-specific study to determine the appropriate chronic aquatic life criterion for aluminum. The NAWQC acute aquatic life criterion of 750 µg/L and the USEPA secondary MCL for protection of human health of 200 µg/L have been used to conduct the RPA.

(b) RPA Results. The maximum effluent concentration (MEC) for aluminum was 377 µg/L while the maximum observed upstream receiving water concentration was 20.9 µg/L. Therefore, aluminum in the discharge does not have the reasonable potential to cause or contribute to an in-stream excursion above the 750 µg/L acute criterion. Furthermore, the maximum annual effluent concentration for aluminum was 179 µg/L while the maximum annual average upstream receiving water concentration was 18.1 µg/L. Therefore, aluminum in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L.

During the past permit cycle, the Discharger used an aluminum-based coagulant in the wastewater treatment process. This use was the likely source of aluminum in the effluent. In July 2012, the Discharger discontinued the use of the aluminum-based coagulant and replaced the product with coagulant that does not contain aluminum. Monthly effluent and semi-annual receiving water aluminum monitoring has been established in this Order. The Discharger is required to submit a report on the results of aluminum site-specific studies to determine appropriate aluminum levels necessary to protect downstream aquatic life beneficial uses.

ii. Cadmium

(a) WQO. The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for cadmium. The Basin Plan also includes a hardness dependent water quality objective for cadmium. Using the default conversion factors and reasonable worst-case measured hardness, as described in section VI.C.2.c of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is 1.5 µg/L and the applicable CTR chronic (4-day average) criterion is 1.18 µg/L., as total recoverable. The Basin Plan maximum water quality objective for cadmium is 0.22 µg/L.

(b) RPA Results. Five effluent samples were collected between October 2010 and January 2011 and analyzed for total recoverable cadmium. The maximum effluent concentration (MEC) for cadmium

was 0.24 µg/L; however, this result was not quantifiable by the laboratory that performed the analysis and is considered an estimated concentration. All other effluent cadmium concentrations were non-detect (<0.05 µg/L). Four receiving water samples were collected between October 2010 and December 2010. The maximum observed upstream concentration was 0.32 µg/L. All other receiving water cadmium concentrations were reported as non-detect (<0.05 µg/L).

Although cadmium was detected in the effluent in one sample, the reported value of 0.24 µg/L represents a laboratory estimate and not a true concentration. The estimated value of 0.24 µg/L does exceed the Basin Plan water quality objective of 0.22 µg/L, however due to all other effluent cadmium results being non-detect and because the value of 0.24 µg/L was an estimate and because the estimated value was only fractionally greater than the 0.22 µg/L objective, reasonable potential for the effluent discharge to cause or contribute to an in-stream excursion above Basin Plan water quality objective cannot be determined at this time.

The upstream receiving water concentration of 0.32 µg/L, however, did exceed the objective. Section 1.3, Step 6 of the SIP states that if the receiving water concentration exceeds the criteria and the pollutant is detected in the effluent, an effluent limitation is required. However; only one of four samples collected detected cadmium in the effluent and the detected value was a laboratory estimate, therefore, insufficient data is available at this time to justify establishing an effluent limitation for cadmium.

Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of limitations, additional monitoring has been established for cadmium. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

iii. Salinity

- (a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains narrative objectives, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there is no USEPA numeric water quality criteria for the protection of

agriculture, industrial and livestock are typical. Numeric values for the protection of these uses are typically done based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective.

Table F-15. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective ¹	Secondary MCL ³	USEPA NAWQC	Effluent	
				Average	Maximum
EC (µmhos/cm)	Varies ²	900, 1600, 2200	N/A	340	454
TDS (mg/L)	Varies	500, 1000, 1500	N/A	198	276
Sulfate (mg/L)	Varies	250, 500, 600	N/A	n/a	n/a
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr, 230 4-day	24.2	29.2

¹ Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan., However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

² The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors.

³ The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

(1) Chloride. The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal to interpret the narrative chemical constituents objective is 106 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers. However, the agricultural water quality goal is not a site-specific goal or objective, but rather a general measure to protect salt-sensitive crops. Site specific levels of chloride for the receiving waters are necessary to interpret the narrative chemical constituents objective for protection of agricultural supply.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through

this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

- (2) Electrical Conductivity.** The secondary MCL for EC is 900 $\mu\text{mhos/cm}$ as a recommended level, 1600 $\mu\text{mhos/cm}$ as an upper level, and 2200 $\mu\text{mhos/cm}$ as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal may be as low as 700 $\mu\text{mhos/cm}$ as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). However, the 700 $\mu\text{mhos/cm}$ agricultural water quality goal is not a site-specific goal or objective, but rather a general measure of electrical conductivity that was determined to protect salt-sensitive crops, such as beans, carrots, turnips, and strawberries under certain soil and climate conditions. Site specific levels of EC for the receiving waters to interpret the narrative chemical constituents objective in the Basin Plan for protection of agricultural supply are necessary. Overall, however, the salinity of the agricultural irrigation water must be maintained at levels in which growers do not need to take extra measures to minimize or eliminate any harmful impacts.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

- (3) Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.
- (4) Total Dissolved Solids.** The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply, the most limiting agricultural water quality goal may be as low as 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and

Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that is not a site-specific goal, but rather a general measure of TDS that was determined to protect salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher TDS concentrations without harm. Site specific levels of TDS for the receiving waters to interpret the narrative chemical constituents objective are necessary.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(b) RPA Results.

(1) Chloride. Chloride concentrations in the effluent ranged from 15 mg/L to 29.2 mg/L, with an average of 24.2 mg/L, for the 6 samples collected by the Discharger in 2009 and 2010. Ambient background concentrations of chloride in the receiving water are not available. Based on the effluent data the discharge does not have reasonable potential to cause or contribute to an instream excursion of the applicable water quality objective for chloride. The Discharger is required to monitor for these constituents in the effluent and receiving water.

(2) Electrical Conductivity. A review of the Discharger's monitoring reports shows an average effluent EC of 340.5 $\mu\text{mhos/cm}$, with a range from 236 $\mu\text{mhos/cm}$ to 454 $\mu\text{mhos/cm}$, for the 44 samples collected between 2007 and 2011. Ambient background concentrations of electrical conductivity in the receiving water are not available. Staff is not aware of any production of salt-sensitive crops in the local area and concluded there is no justification to apply salt-sensitive objectives to the discharge. The effluent levels do not exceed the secondary MCL for EC. Based on the effluent data the discharge does not have reasonable potential to cause or contribute to an instream excursion of the applicable water quality objective for EC. The Discharger is required to monitor for these constituents in the effluent and receiving water.

(3) Sulfate. The previous Order did not require the Discharger to monitor for sulfate. Reasonable potential cannot be determined due to the lack of effluent and receiving water data. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for sulfate at this time. Instead of limitations, additional monitoring has been established for sulfate within the Salinity Evaluation and Minimization Plan.

(4) Total Dissolved Solids. The average TDS effluent concentration was 198 mg/L with concentrations ranging from 135 mg/L to 276 mg/L. These levels do not exceed the applicable water quality objectives. Ambient background concentrations of TDS in the receiving water are not available. Staff is not aware of any production of salt-sensitive crops in the local area and concluded there is no justification to apply salt-sensitive objectives to the discharge. The effluent levels do not exceed the secondary MCL for TDS. Based on the effluent data the discharge does not have reasonable potential to cause or contribute to an instream excursion of the applicable water quality objective for TDS. The Discharger is required to monitor for these constituents in the effluent and receiving water.

(c) WQBELS. . Effluent limitations based on the MCL or the Basin Plan would likely require construction and operation of a reverse osmosis treatment plant. The State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), states, “...*the State Board takes official notice [pursuant to Title 23 of California Code of Regulations, Section 648.2] of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City’s municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects.*” The State Water Board states in that Order, “*Although the ultimate solution to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta.*” The State Water Board goes on to say, “*Construction and operation of reverse osmosis facilities to treat discharges...prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach.*”

The Central Valley Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the

16 March 2006, Central Valley Water Board meeting, Board Member Dr. Karl Longley recommended that the Central Valley Water Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, *“The process of developing new salinity control policies does not, therefore, mean that we should stop regulating salt discharges until a salinity Policy is developed. In the meantime, the Board should consider all possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board’s policy to actively participate in policy development.”*

The discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, since the Discharger discharges to the upper Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading is contrary to the Region-wide effort to address salinity in the Central Valley. In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan and water supply monitoring is required to evaluate the relative contribution of salinity from the source water to the effluent.

- d. Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, dichlorobromomethane, nitrate, nitrite, pH, settleable solids, and zinc. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Ammonia

- (a) WQO.** The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the upper Sacramento River has a beneficial use of cold freshwater habitat and the presence

of salmonids and early fish life stages in the upper Sacramento River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

The 30-day average chronic criterion (or CCC) was evaluated for the receiving water based on monitoring data obtained during the discharge season from the period of September 2007 through February 2011. The chronic criterion values were calculated using the CCC equation and the rolling 30-day average pH and temperature of the downstream receiving water. 53 paired data sets of receiving water pH and temperature were available for analyses. The 1/10th percentile (i.e. lowest 99.9th percentile) of each data set was selected as the most stringent criteria, which is consistent with the 1-in-3 year average frequency for criteria excursions recommended by the USEPA. As a result, the receiving water CCC was 2.6 mg/L ammonia as N. Analyses of annual fluctuations in receiving water CCC showed no significant pattern of occurrence with respect to the seasons of fall, winter, and spring; as annual peak receiving water CCCs occurred in all 3 of these seasons within the four-year data set. In addition, the Discharger does not discharge during the summer season. Therefore, the resulting receiving water 30-day CCC is 2.6 mg/L ammonia as N. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 2.6 mg/L (as N), the 4-day average concentration that should not be exceeded is 6.5 mg/L (as N).

(b) RPA Results. The maximum effluent concentration (MEC) for ammonia was 18.1 mg/L while the maximum observed upstream receiving water concentration was 0.04 mg/L. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The Central Valley Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP

procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. An acute aquatic-life dilution credit of 3 and a chronic aquatic-life dilution credit of 4 have been allowed for development of the WQBELs for ammonia. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for ammonia of 4.6 mg/L and 8.4 mg/L, respectively, based on the NAWQC standard.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 18.1 mg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Discharger submitted an infeasibility analysis on 26 July 2012. A compliance time schedule for compliance with the ammonia effluent limitations is established in **TSO No. R5-20XX-XXXX** in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

ii. **Bis(2-ethylhexyl) phthalate**

(a) WQO. The CTR includes a criterion of 1.8 ug/L for bis(2-ethylhexyl) phthalate for the protection of human health for waters from which both water and organisms are consumed

(b) RPA Results. The maximum effluent concentration (MEC) for bis(2-ethylhexyl) phthalate was 3.0 ug/L out of 39 samples collected between September 2007 and May 2011. The maximum observed upstream receiving water concentration was 2.0 ug/L out of 4 samples collected between January 2009 and December 2010. The arithmetic mean of the observed upstream receiving water concentrations was 1.2 ug/L. Therefore, bis(2-ethylhexyl) phthalate in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) WQBELs. The receiving water contains assimilative capacity for bis(2-ethylhexyl) phthalate based on the arithmetic mean of the upstream receiving water data. Therefore, a dilution credit of 2:1 was allowed in the development of the WQBELs for bis(2-ethylhexyl) phthalate. Based on the allocated dilution credit, an AMEL of 3.0 ug/L

and a MDEL of 5.6 ug/L is calculated. Effluent limitations for bis(2-ethylhexyl) phthalate is a new limitation for the Discharger.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that a MEC of 3.0 ug/L is less than or equal to the applicable WQBEL. Furthermore, the average bis(2-ethylhexyl) phthalate effluent concentration was 1.4, with a standard deviation of 0.7 and a coefficient of variation of 0.51. The maximum projected concentration based on past plant performance (based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean) has been calculated to be 3.5 ug/L. The maximum projected value is also less than the applicable WQBELs. Therefore, the Discharger should be able to comply with the AMEL and MDEL.

iii. Chlorine Residual

(a) WQO. USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 µg/L and 0.019 µg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) RPA Results. The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the Sacramento River. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 µg/L and 0.019 µg/L, respectively, based on USEPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) Plant Performance and Attainability. Although the Discharger has violated the chlorine residual limitation on five occasions since 2008, the Central Valley Water Board believes immediate compliance with these effluent limitations is feasible.

iv. Copper

- (a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for copper. The Basin Plan also includes a hardness dependent water quality objective for copper. Using the default conversion factors and reasonable worst-case measured hardness, as described in section VI.C.2.c of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is 5.77 µg/L and the applicable CTR chronic (4-day average) criterion is 4.17 µg/L., as total recoverable. The Basin Plan instantaneous maximum objective for copper is 5.72 µg/L.
- (b) **RPA Results.** The maximum effluent concentration (MEC) for copper was 32 µg/L (as total recoverable) while the maximum observed upstream receiving water concentration was 1.2 µg/L (as total recoverable). Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above both the CTR criterion for the protection of freshwater aquatic life and the Basin Plan instantaneous maximum water quality objective.
- (c) **WQBELs.** An acute aquatic life dilution credit of 3 and chronic aquatic life dilution credit of 4 have been allowed for development of the WQBELs for copper. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for copper of 9.1 µg/L and 19.3 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 32 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Discharger submitted an infeasibility analysis on 26 July 2012. A compliance time schedule for compliance with the copper effluent limitations is established in TSO No. R5-20XX-XXXX in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

v. Dichlorobromomethane

- (a) **WQO.** The CTR includes a criterion of 0.56 ug/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed. The following example is for if the discharge is subject to a TMDL.

(b) RPA Results. The maximum effluent concentration (MEC) for dichlorobromomethane was 1.4 µg/L based on 6 samples collected between January 2009 and December 2010. The maximum observed upstream receiving water concentration was <0.1 µg/L based on six samples collected during the same time period. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(d) WQBELs. The receiving water contains assimilative capacity for dichlorobromomethane, therefore, a dilution credit of 2:1 was allowed in the development of the WQBELs for dichlorobromomethane. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for dichlorobromomethane of 1.5 µg/L and 3.6 µg/L, respectively, based on protection of the CTR criterion for the protection of human health.

(e) Plant Performance and Attainability. Analysis of the effluent data shows that a MEC of 1.4 ug/L is less than the applicable WQBELs. Furthermore, the average dichlorobromomethane effluent concentration was 0.6, with a standard deviation of 0.5 and a coefficient of variation of 0.9. The maximum projected concentration based on past plant performance (based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean) has been calculated to be 2.2 ug/L. The maximum projected value is also less than the applicable WQBEL. Therefore, the Discharger should be able to comply with the AMEL and MDEL.

vi. Nitrate and Nitrite

(a) WQO. DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10,000 µg/L as Primary MCL) and NAWQC for protection of human health (10,000 µg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) RPA Results. Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to

cause adverse health effects in humans. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate.

(c) WQBELs. This Order contains a final average monthly effluent limitation (AMEL) for nitrate plus nitrite (as N) of 10 mg/L, based on the protection of the Basin Plan's narrative chemical constituents objective and to assure the treatment process adequately nitrifies and denitrifies the waste stream.

(d) Plant Performance and Attainability. The maximum effluent concentration (MEC) for nitrate was 4.53 ug/L out of 26 samples collected between September 2007 and May 2011. The second highest effluent nitrate concentration was 1.25 mg/L. The maximum MEC for nitrite was 0.08 ug/L out of 5 samples collected during the same time period. The maximum projected nitrate concentration based on past plant performance (based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean) has been calculated to be 3.2 ug/L. The Discharger's MECs and maximum projected value for nitrate are all less than the applicable WQBEL. Therefore, the Discharger should be able to comply with the AMEL for nitrate plus nitrite (as N). Effluent limitations on nitrate plus nitrite (as N) is new limitation for the Discharger.

vii. Pathogens

(a) WQO. DPH has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as *"...an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities."* Title 22 is not directly applicable to surface waters; however, the Central Valley

Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by the DPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

In addition, in a letter to the Central Valley Water Board dated 8 April 1999, DPH indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

(b) RPA Results. The beneficial uses of the Sacramento River (Box Canyon to Shasta Lake include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there may be, at times, less than 20:1 dilution. Although less than 20:1 dilution is not common, the flow in the receiving water is dictated by releases from Box Canyon Dam which do not necessarily mimic the natural hydrologic cycle of the watershed. As such, minimum receiving water flows may occur at any time, including at times when high wet weather effluent flows are present. The minimum flow in the receiving water at any time is 42 cfs, therefore any effluent flow greater than 1.29 mgd will result in a river to effluent dilution of less than 20:1 (once the discharge is fully mixed with the receiving water). It is not uncommon for effluent flow to be above 1.29 mgd in the winter and spring³², and the minimum Box Canyon Dam flow release of 42 cfs may occur during these periods.

Furthermore, the effluent discharges to a segment of river that is a year-round whitewater recreation (kayaking) area provided receiving water flows are greater than or equal to 400 cfs³³. The whitewater kayaking segment is known as the Box Canyon Run. The effluent outfall location is in the immediate vicinity of a technical river rapid that whitewater kayakers must navigate and therefore undoubtedly come in body-contact with the receiving water and effluent. During periods when whitewater recreation is present near the outfall, the river to effluent flows are greater than 20:1 once the discharge has fully mixed with the receiving water. However, because the effluent

³² Observed effluent winter peak: 2.6 mgd, effluent winter average: 1 mgd, and effluent spring peak: 2.1 mgd.

³³ As measured at Box Canyon Dam.

discharges to the river in an area of slack water immediately above a technical river rapid, boaters may come in direct contact with undiluted effluent or minimally diluted effluent (i.e. <20:1) in either the slack water (where they stop to scout the rapid) or in the rapid itself. Whitewater kayaking is considered contact recreation.

To protect the beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease during periods of less than 20:1 dilution, which includes the period of time in which whitewater recreation is present, in and around the outfall. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DPH.

There are periods of time when wastewater receives dilution of more than 20:1 and the whitewater recreation, as described above, is not present. Therefore, the DPH requirements for effluent coliform concentration not to exceed 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL more than once in any 30 day period are applicable for such flow regimes.

- (c) **WQBELs.** In accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum.

In addition to coliform limitations, a turbidity operation and maintenance specifications have been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with DPH recommended Title 22 disinfection criteria, weekly average effluent limitations are impracticable for turbidity. This Order includes operation and maintenance specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5% of the time within a 24-hour period; and 10 NTU as an instantaneous maximum. The previous Order included effluent limitations for turbidity during the fall and spring discharge period (15 April through 14 June and 15 September through 15 November) of 5.0 NTU as a weekly average

and 10.0 as a daily maximum. Turbidity effluent limitations for the fall and spring discharge period have been not been carried over from the previous Order as receiving water data indicated no reasonable potential for the effluent cause an exceedance to the Basin Plan receiving water turbidity objective.

Final WQBELs for BOD₅ and TSS are included in this permit to ensure that Best Practicable Treatment or Control (BPTC) measures are being implemented for these constituents. The numeric limits are based on the technical capability of the tertiary process (filtration) which has proven to be an effective BPTC measure, as discussed in Section IV.D.4. The limitations are necessary to protect the beneficial uses of the receiving water and to limit any new degradation to the high-quality receiving water. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD₅ and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD₅ and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD₅ and TSS than the secondary standards currently prescribed during the winter discharge period (16 November through 14 April). This fact is demonstrated below in the Discharger's BOD₅ and TSS mass loading data collected during the last permit cycle. Mass loading rates during the winter discharge period are significantly greater than mass loading rates during the fall and spring period when the discharge is already subject to the more stringent BOD₅ and TSS limitations.

	Fall and Spring Loading Rates (lbs/day)	Winter Loading Rates (lbs/day)	Percent Increase (%)
BOD ₅ - Average	16	94	488
BOD ₅ - Maximum	37	320	765
TSS - Average	20	94	370
TSS - Maximum	36	334	828

Therefore, this Order requires AMELs for BOD₅ and TSS of 10 mg/L, which is technically based on the capability of a tertiary system and to ensure BPTC is implemented. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD₅ and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

This Order contains effluent limitations for BOD₅, TSS, and total coliform organisms, and operation and maintenance specifications for

turbidity, that require a tertiary level of treatment, or equivalent. The treatment is necessary to protect the beneficial uses of the receiving water. Effluent meeting 10 mg/L BOD₅, 10 mg/L TSS, and a coliform effluent limit of 2.2 MPN/100 mL during the fall and spring discharge period (15 April through 14 June and 15 September through 15 November) was required in the previous permit³⁴ and the Central Valley Water Board previously considered the factors in Water Code section 13241 is establishing the fall and spring period discharge requirements for BOD₅, TSS, and total coliform. However, equivalent effluent limitations for BOD₅, TSS, and total coliform in the winter period (16 November through 14 April) are a new requirement on the discharge. Also, the operation and maintenance specifications for turbidity are new requirements for the full discharge to surface water period. Therefore, the Central Valley Water Board has considered the following factors in Water Code section 13241:

- (1) The past, present and probable future beneficial uses of the Sacramento River (Box Canyon to Shasta lake) include municipal and domestic supply, agricultural irrigation, agricultural stock watering, body contact water recreation, other non-body contact water recreation, cold freshwater aquatic habitat, cold fish migration habitat, and wildlife habitat.
- (2) The environmental characteristics of the hydrographic unit, including the quality of the available water, will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities that would otherwise be unsafe according to recommendations from DPH.
- (3) Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors that affect water quality in the area.
- (4) The economic impact of requiring an increased level of treatment has been considered. The Discharger has estimated that the increased level of treatment will cost approximately \$10 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, which includes prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation,

³⁴ The final effluent limitations table in WDR Order No. R5-2007-0056 contained incorrect coliform limits for the fall and spring discharge period; however the fact sheet included language that supported the application of the 2.2 MPN/100 mL coliform limits in the fall and spring period. Furthermore, the Order prior to the 2007 Order, WDR Order No. 5-01-218, clearly presented the more stringent, fall and spring period, effluent coliform limits.

tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for

- (5) advanced treatment specific for those pollutants.
- (6) The requirement to provide tertiary treatment for this discharge will not adversely impact the need for housing in the area. The potential for developing housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DPH recommends that, in order to protect the public health, relatively undiluted wastewater effluent must be treated to a tertiary level for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.
- (7) It is the Central Valley Water Board's policy, (Basin Plan, page IV-12.00, Policy 2) to encourage the reuse of wastewater. The Central Valley Water Board requires dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment that will allow for a greater variety of uses in accordance with CCR, Title 22.
- (8) The Central Valley Water Board has considered the factors specified in Water Code section 13263, including considering the provisions in Water Code section 13241, in adopting the disinfection and filtration requirements under Title 22 criteria. The Central Valley Water Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the Sacramento River (Box Canyon to Shasta Lake), including water contact recreation and irrigation uses.

During periods of discharge when a river to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs and only during the time period from 16 November through 14 April, effluent total coliform organisms shall not to exceed 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL more than once in any 30 day period. As such, the turbidity operation and maintenance specification, as described in this section, does not apply when a river to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs within the 16 November through 14 April time period.

- (d) **Plant Performance and Attainability.** New or modified control measures are necessary in order to comply with the disinfection and filtration requirements, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar

days. Furthermore, the more stringent effluent limitations for total coliform organisms, BOD₅, and TSS between 16 November through 14 April are new regulatory requirements within this permit. The Discharger submitted an infeasibility analysis on 26 July 2012. As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

viii. pH

- (a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *“...pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.”*
- (b) **RPA Results.** The discharge of domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan’s numeric objectives for pH.
- (c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH. In addition, the instantaneous maximum pH effluent limitation has been used to calculate the acute criteria for ammonia.
- (d) **Plant Performance and Attainability.** The minimum and maximum effluent pH values were 6.1 and 8.0, respectively, based on 767 data points collected between January 2007 and May 2011. The average and median pH values were both 6.9. The effluent data shows that the minimum observed pH value is less than the instantaneous minimum effluent limitation of 6.5, therefore the minimum pH limitation appears to put the Discharger in immediate non-compliance. The Discharger can immediately comply with the instantaneous maximum of 8.5. The instantaneous minimum pH effluent limitation of 6.0 is a new limitation for the Discharger. The Discharger submitted an infeasibility analysis on 26 July 2012. As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

ix. Settleable Solids

- (a) **WQO.** For inland surface waters, the Basin Plan states that *“[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.”*

- (b) RPA Results.** The discharge of municipal wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids.
- (c) WQBELs.** This Order contains average monthly and average daily effluent limitations for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities. These limitations are equal to the effluent settleable solids limitations in the previous Order.
- (d) Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of <0.2 mL/L-hour is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

x. Zinc

- (a) WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for zinc. The Basin Plan also includes a hardness dependent water quality objective for zinc. Using the default conversion factors and reasonable worst-case measured hardness, as described in section VI.C.2.c of this Fact Sheet, the applicable CTR acute (1-hour average) criterion is 54.0 µg/L and the applicable CTR chronic (4-day average) criterion is 54.0 µg/L., as total recoverable. The Basin Plan maximum water quality objective for zinc is 16.0 µg/L.
- (b) RPA Results.** The maximum effluent concentration (MEC) for zinc was 47.6 µg/L (as total recoverable) while the maximum observed upstream receiving water concentration was 12.6 µg/L (as total recoverable). Therefore, zinc in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan maximum water quality objective.
- (c) WQBELs.** An acute aquatic life dilution credit of 3 and chronic aquatic life dilution credit of 4 have been allowed for development of the WQBELs for zinc. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for zinc of 12.9 µg/L and 26.2 µg/L, respectively, based on the Basin Plan instantaneous maximum water quality objective.
- (d) Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 47.6 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to

put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Discharger submitted an infeasibility analysis on 26 July 2012. A compliance time schedule for compliance with the zinc effluent limitations is established in TSO No. **R5-20XX-XXXX** in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

4. WQBEL Calculations

- a. This Order includes WQBELs for ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, dichlorobromomethane, nitrate, nitrite, pH, pathogens, BOD₅, TSS, settleable solids, and zinc. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$\begin{array}{ll} ECA = C + D(C - B) & \text{where } C > B, \text{ and} \\ ECA = C & \text{where } C \leq B \end{array}$$

where:

ECA	= effluent concentration allowance
D	= dilution credit
C	= the priority pollutant criterion/objective
B	= the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

- c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

- d. Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA_{acute} and LTA_{chronic}) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.
- e. Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$\begin{aligned}
 AMEL &= mult_{AMEL} \left[\min \left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic} \right) \right] \\
 MDEL &= mult_{MDEL} \left[\min \left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}} \right) \right] \\
 MDEL_{HH} &= \left(\frac{mult_{MDEL}}{mult_{AMEL}} \right) AMEL_{HH}
 \end{aligned}$$

where:

$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL

$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL

M_A = statistical multiplier converting acute ECA to LTA_{acute}

M_C = statistical multiplier converting chronic ECA to LTA_{chronic}

Summary of Water Quality-Based Effluent Limitations Discharge Point No. 001

Table F-16. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day ¹	67	100	200	--	--
pH	standard units	--	--	--	6.5	8.5
Priority Pollutants						
Bis(2-Ethylhexyl) phthalate	µg/L	3.0	--	5.6	--	--
Copper, Total Recoverable	µg/L	9.1	--	19.3	--	--
Dichlorobromomethane	µg/L	1.5	--	3.6	--	--
Zinc, Total Recoverable	µg/L	12.9	--	26.2	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	4.6	--	8.4	--	--
Nitrate Plus Nitrite (as N)	mg/L	10.0	--	--	--	--
Settleable Solids	ml/L-hr	0.1	--	0.2	--	--

¹Based on an ADWF of 0.80 mgd.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00) The Basin Plan also states that, "...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric

water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay----- 70%
Median for any three consecutive bioassays----- 90%

b. Chronic Aquatic Toxicity. The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00). Based on chronic WET testing performed by the Discharger from October 2007 through September 2011, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. As shown in Table F-17 below.

Table F-17. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
10/25/2007	1	1	1	1	1
10/07/2008	1	1	1	1	1
11/18/2009	1	1	1	1	1
11/30/2010	1	1	1	1	1
9/19/2011	1	1	1	1	1

The Monitoring and Reporting Program of this Order requires annual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated. A dilution credit for whole effluent toxicity is not being included in this Order; therefore the monitoring trigger is set at 1 TUc. The previous Order set a monitoring trigger of 10 TUc. As stated above, the Discharger's WET testing on the discharge did not demonstrate

reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective and therefore; the TUC for this Order has been set at 1.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region³⁵ that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, *"In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

³⁵ In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

D. Final Effluent Limitations

1. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1.g. of this Order.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *“First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge’s potential for causing acute toxic effects would be missed.”* (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, bis(2-ethylhexyl) phthalate, copper, dichlorobromomethane, and zinc as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD₅, TSS, pH, chlorine residual, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

3. Satisfaction of Anti-Backsliding Requirements

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, with the exception of effluent limitations for copper, zinc, ammonia, electrical conductivity, turbidity, 4,4'-DDT, and temperature. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2007-0056. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations, as explained below.

The following is a comparison of the copper, zinc, and ammonia effluent limitations in the previous Order to the new final copper, zinc, and ammonia effluent limitations:

Constituent	Order No. R5-2007-0056 Existing Limits (AMEL/MDEL)	Final Limits (AMEL/MDEL)
Copper, Total Recoverable (ug/L)	3.94/7.90	9.1/19.3
Zinc, Total Recoverable (ug/L)	10.76/21.58	12.9/26.2
Ammonia (as N) (mg/L)	3.68/29.57 ¹	4.6/8.4

¹ One-hour average.

Order R5-2007-0056 established end-of-pipe effluent limitations for copper, zinc, and ammonia without dilution credits. As discussed in section IV.C.2.c of this Fact Sheet, a mixing zone and dilution credits for aquatic-life criteria are appropriate, and assimilative capacity is available, based on new information that was not available at the time Order R5-2007-0056 was adopted, which supports the calculation of less stringent effluent limitations for copper, zinc, and ammonia. Because effluent limitations may only be as high as is justified under State and federal Antidegradation policies, this Order does not allocate all of the available assimilative capacity and establishes water quality-based effluent limitations for copper, zinc, and ammonia based on a dilution credit of 3:1 and 4:1 for acute and chronic aquatic-life criteria, respectively.

Order No. R5-2007-0056 included effluent limitations on electrical conductivity, turbidity, 4,4'-DDT, and temperature. Based on the new information obtained by the effluent and receiving water monitoring data collected from September 2007 through June 2011, the discharge does not indicate reasonable potential to exceed water quality objectives or criteria for electrical conductivity, turbidity, 4,4'-DDT, and temperature.

Relaxation and removal of the WQBELs in the previous permit is in accordance with CWA sections 303(d)(4) and 402(o), which allow for the removal of WQBELs for attainment waters where antidegradation requirements are satisfied. Removal of the WQBELs is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

4. Satisfaction of Antidegradation Policy

- a. Surface Water.** This Order does not allow for an increase in flow or mass of pollutants to the receiving water. The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order requires the implementation of additional treatment or control measures to ensure that BPTC is being used at the Facility for BOD₅ and total suspended solids (TSS). Practicable treatment or control technologies are available to reduce the concentrations of BOD₅ and TSS in the discharge. Such reductions will result in lower loading of oxygen demanding substances and suspended solids and result in improved downstream water quality. Technologies such as granular media filtration of secondary-treated wastewater have proven to be capable of meeting the effluent limitations for BOD₅ and TSS contained in this Order. Other similarly-sized, located, and financed dischargers have implemented, or are actively working toward implementing treatment or controls sufficient to achieve the BOD₅ and TSS effluent limitations contained in this Order.

- b. Groundwater.** The Discharger utilizes a leachfield for effluent disposal. Effluent discharge to the leachfield is not raw wastewater; it has been treated to secondary standards, and disinfected. This Order does not allow for an increase in flow or mass of pollutants to the groundwater. The permitted groundwater water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for BOD₅ and TSS. The WQBELs consist of restrictions on acute toxicity, ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, dichlorobromomethane, nitrate, nitrite, settleable solids, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In

addition, this Order includes new, more stringent, effluent limitations for BOD₅, TSS, total coliform organisms (for specific receiving water flow conditions), and pH to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD₅, TSS, and pH that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in section IV.C.3.d. of this Fact Sheet.

Summary of Final Effluent Limitations Discharge Point No. 001

Table F-18. Summary of Final Effluent Limitation

Parameter	Units	Effluent Limitations					Basis ¹
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Average Dry Weather Flow	mgd	--	--	0.8	--	--	DC
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	30			TTC
	lbs/day ¹	67	100	200			
	% Removal	85					CFR
Total Suspended Solids	mg/L	10	15	30			TTC
	lbs/day	67	100	200			
	%Removal ¹	85					CFR
pH		--	--	--	6.5	8.5	BP
Bis(2-Ethylhexyl) phthalate	µg/L	3.0	--	5.6	--	--	CTR
Copper, Total Recoverable	µg/L	9.1	--	19.3	--	--	CTR
Dichloro-bromomethane	µg/L	1.5	--	3.6	--	--	CTR
Zinc, Total Recoverable	µg/L	12.9	--	26.2	--	--	BP
Ammonia Nitrogen, Total (as N)	mg/L	4.6	--	8.4	--	--	NAWQC
Nitrate Plus Nitrite (as N)	mg/L	10	--	--	--	--	MCL
Settleable Solids	mL/L-hr	0.1	--	0.2	--	--	BP

Parameter	Units	Effluent Limitations					Basis ¹
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Total Coliform Organisms ⁴	MPN/100 mL		2.2 ²	240	23 ³		Title 22
Total Coliform Organisms	MPN/100 mL		23 ²	240			DPH

DC – Based on the design capacity of the Facility.

TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.

CFR – Based on secondary treatment standards contained in 40 CFR Part 133.

BP – Based on water quality objectives contained in the Basin Plan.

CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.

NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.

SEC MCL – Based on the Secondary Maximum Contaminant Level.

TMDL – Based on the TMDL for salinity and boron in the lower San Joaquin River.

MCL – Based on the Primary Maximum Contaminant Level.

Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

¹ Based on ADWF of 0.8 mgd.

² 7-day median.

³ No more than once in a 30-day period.

⁴ From 16 November through 14 April when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs.

E. Interim Effluent Limitations

1. Compliance Schedule for BOD₅, TSS, pH, and Title 22 (or Equivalent)

disinfection requirements. The permit limitations for BOD₅, TSS, pH, and total coliform organisms are more stringent than the limitations previously imposed. These new limitations are based effluent sampling and the California Department of Public Health's recommendations. The Discharger has complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrates the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for BOD₅, TSS, pH, and total coliform organisms is established in the Order.

A compliance schedule is necessary because the Discharger must implement actions, including designing and constructing facilities and securing financing to comply with the more stringent permit limitations and disinfection requirements. Construction includes purchase and installation of necessary equipment.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts. The compliance schedule is as short as possible.

Interim limitations based on existing effluent limitations have been established in this Order. The interim limitations were determined as described in section IV.E.2., below, and are in effect through until the final limitations take effect. (As part of the compliance schedule, this Order requires the Discharger to submit a corrective

action plan and implementation schedule to assure compliance with the final effluent limitations for BOD₅, TSS, pH, and Title 22 (or equivalent) disinfection requirements. In addition, the Discharger shall prepare and implement a pollution prevention plan that is in compliance with Water Code section 13263.3(d)(3). The interim numeric effluent limitations and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

- 2. Interim Limits for BOD₅, TSS, pH, and total coliform organisms.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than one year. Interim effluent limitations must be based on current treatment plant performance or existing final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, average monthly, etc.) for effluent limitations for which compliance protection is intended.

The interim limitations for BOD₅, TSS, pH, and total coliform organisms in this Order are based on the final effluent limitations from the previous Order.

Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved. Limited, short-term degradation is consistent with state and federal policies and is specifically authorized by 40 CFR § 122.47 and the EPA-approved Compliance Schedule Policy.

The following table summarizes the interim effluent limitations for BOD₅, TSS, and pH:

Table F-19. Interim Effluent Limitation Summary

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C ¹	mg/L	30	45	60	--
	lbs/day ²	200	300	400	--
Total Suspended Solids ¹	mg/L	30	45	60	--
	lbs/day ²	200	300	400	--
pH	Standard Units	--	--	6.0	--

¹ Interim limitation only applies from 16 November through 14 April.

² Based on ADWF of 0.8 mgd.

3. **Title 22 (or equivalent) Disinfection Requirements.** The establishment of Title 22 (or equivalent) disinfection requirements has not been previously required for this discharge; therefore, a schedule for compliance with these requirements is included as a Provision in this Order. This Order provides interim effluent limitations for total coliform organisms during periods of discharge from 16 November through 14 April, when a receiving water to effluent flow ratio of <20:1 exists or the receiving water is ≥ 400 cfs, based on the existing effluent limitations required by Order No. R5-2007-0056, which the Discharger is currently capable of meeting. Full compliance with Title 22 (or equivalent) disinfection requirements is not required by this Order until **5 years from the effective date of this Order**. The compliance schedule for tertiary treatment has been developed in accordance with the Discharger's implementation schedule.

F. Land Discharge Specifications

1. The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.
2. **Daily Average Discharge Specification.** The discharge specification is based on the leachfield design average dry weather flow rate of 0.7 mgd.

G. Reclamation Specifications

1. Treated wastewater discharged for reclamation is regulated under Water Recycling Requirements Order No. 5-01-083 and must meet the requirements of CCR, Title 22.
2. **TSS and BOD₅.** The reclamation specifications for TSS and BOD₅ are based on limitations that are achievable by the Discharger with the dissolved air-flotation and continuous sand filter system. The TSS and BOD₅ specifications are the same as in the previous Order.
3. **Total Coliform Organisms.** The previous Order limited total coliform organisms to 2.2 MPN/100 mL as a monthly median and 23 MPN/100 mL at any time. These discharge specifications have been changed to be consistent with the recycled water limitations for total coliform organisms in Water Recycling Requirements Order No. 5-01-083 which consist of limits for total coliform organisms of 2.2 MPN per 100 mL as a 7-day median and 23 MPN per 100 mL, more than once in any 30-day period. A daily maximum total coliform organisms limitation of 240 MPN/100 mL has been added as a specification as a result of the removal of the 23 MPN/100 mL daily maximum limitation and the Facility's proven ability to meet the limitation.
4. **Turbidity.** The turbidity specifications are the same as in the previous Order. The values are based on what can be achieved by the Discharger with the existing filtration system for an effluent containing a high algae content. These limits are required to enhance the effectiveness of chlorine disinfection.

5. Order No. R5-2007-0056 contained an acute whole effluent toxicity reclamation discharge specification; however, the acute whole effluent toxicity specification on the reclamation discharge has not been retained in this Order. There are no residual chlorine limitations on the reclamation discharge; however the Discharger is required to dechlorinate the reclamation discharge, as the recycled water may be stored in ponds at the Mt. Shasta Golf Resort that contain aquatic life.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.
2. **Turbidity.** Order No. R5-2007-0056 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State

Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution No. R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

This Order includes operational specifications that require the Discharger to operate the treatment system to insure that turbidity shall not exceed 2 NTU as a daily average, and 5 NTU more than 5 percent of the time within a 24 hour period, and 10 NTU during specific time and flow periods that warrant the specification. Because this Order limits the average daily discharge of turbidity to 2 NTU, the Order will be protective of the receiving water under all natural background conditions as defined in the Basin Plan's revised water quality objective for turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Regional Water Board finds that the relaxation of the turbidity receiving water limitation is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

B. Groundwater

1. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD₅ and TSS reduction requirements). The monitoring frequencies for BOD₅, and TSS (1/week) and flow (continuous) have been retained from Order No. R5-2007-0056. Weekly monitoring for pH has been added to this Order.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to

assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow, acute toxicity, BOD₅, TSS, total chlorine residual, bis (2-ethylhexyl)phthalate, settleable solids, have been retained from Order No. R5-2007-0056 to determine compliance with effluent limitations for these parameters.
3. Effluent monitoring frequencies and sample types for chronic toxicity, turbidity, total dissolved solids, EC, standard minerals have been retained from Order No. R5-2007-0056.
4. Effluent monitoring frequencies for copper and zinc (1/month) have been retained from Order No. R5-2007-0056, however the type of sample has been changed from grab to 24-hour composite.
5. Effluent sample types for nitrate and nitrite (grab) have been retained from Order No. R5-2007-0056, however sampling frequency has been increased from semiannually to once per month to determine compliance with effluent limitations for these parameters.
6. Effluent sample type for ammonia (grab) has been retained from Order No. R5-2007-0056, however the sampling frequency has been increased from quarterly to once per month to determine compliance with effluent limitations for this parameter.
7. Effluent monitoring frequency for total coliform organisms has increased from weekly to 2/week to assess compliance with effluent limitations and to assess the effectiveness of the treatment process.
8. Effluent monitoring requirements for pH (continuous) and temperature (3/week), hardness (1/month), and aluminum (1/month), and cadmium (1/quarter) are new requirements for this Order. Monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and/or to assess the impacts of the discharge on the receiving stream and groundwater.
9. Monitoring data collected over the existing permit term for 4,4'-DDT did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for this parameter has not been retained from Order No. R5-2007-0056.
10. Effluent monitoring frequency for priority pollutants has changed from once per year to semiannually during the third and fourth year of the Order. In accordance with Section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

- 11. California Water Code section 13176, subdivision (a), states:** “The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.” The Department of Public Health certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times. Analyses for these constituents are conducted on site by the Discharger.

C. Whole Effluent Toxicity Testing Requirements

- 1. Acute Toxicity.** Consistent with Order No. R5-2007-0056 96-hour bioassay testing is required quarterly to demonstrate compliance with the effluent limitation for acute toxicity.
- 2. Chronic Toxicity.** Consistent with Order No. R5-2007-0056 chronic whole effluent toxicity testing is required annually in order to demonstrate compliance with the Basin Plan’s narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

- a.** Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.
- b.** This Order retains sample types and monitoring frequencies from Order No. R5-2007-0056 for the receiving water at Monitoring Locations RSW-001 and RSW-002 for flow, temperature, total coliform organisms, pH, hardness (RSW-001 only), dissolved oxygen, and turbidity.
- c.** Surface water monitoring requirements (semi-annual) for copper, zinc, bis(2-ethylhexyl)phthalate, dichlorobromomethane, and cadmium are new requirements for this Order. Monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

- d. Consistent with the effluent monitoring requirements, monitoring for priority pollutants and other constituents of concern upstream of Discharge Point No. 001 at Monitoring Location RSW-001 is required twice during the third year and fourth year of the permit term (i.e. 4 sampling events) to collect the necessary data to determine reasonable potential as required in section 1.2 of the SIP. The hardness (as CaCO₃) of the upstream receiving water shall also be monitored concurrently with the priority pollutants as well as pH to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

2. Groundwater

- a. Water Code section 13267 states, in part, “(a) A Regional Water Board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region” and “(b) (1) In conducting an investigation..., the Regional Water Board may require that any person who... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.” The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, a Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program is issued pursuant to Water Code section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.
- b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to

background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.

- c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including Resolution No. 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.
- d. Groundwater monitoring frequency for EC, TDS, nitrate, and standard minerals has increased from 1/year to 1/quarter as a result of the Discharger's year-round usage of the leachfield for disposal and to determine any increase in constituent concentrations, when compared to background
- e. Groundwater monitoring requirements (1/quarter) for depth to groundwater, groundwater elevation, gradient, gradient direction, fixed dissolved solids, pH, total coliform organisms, total nitrogen, ammonia, TKN are new requirements for this Order. The monitoring is necessary to determine if the discharge has caused an increase in constituent concentrations, when compared to background and the frequency (1/quarter) is necessary because the Discharger utilizes the leachfield for disposal year-round.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.6.a. of this Order. Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater.

3. Reclamation Discharge Monitoring

- e. Reclamation discharge monitoring is required to determine compliance with reclamation discharge specifications. Reclamation monitoring for flow (continuous), total residual chlorine (before (1/week) and after (continuous)

dechlorination), BOD₅ (1/week), TSS (1/week), turbidity (3/day) has been retained from Order No. R5-2007-0056.

- f. Reclamation discharge monitoring frequency for total coliform organisms has increased from 1/week to 1/day in accordance with chapter 3, division 4, Title 22, CCR, Section 60321.
- g. Reclamation monitoring for pH (continuous) is a new monitoring requirement. pH monitoring is necessary to determine compliance with reclamation discharge specifications.

4. Land Discharge Monitoring

- e. Land discharge monitoring is required to ensure that the discharge to the land disposal area complies with the land discharge specifications in section IV.B and Treatment and Storage Pond and Land Disposal Operating Requirements in section VI.C.4 of this Order.
- f. Monitoring frequencies and sample types for flow (continuous), BOD₅ (1/week), TSS (1/week) have been retained from Order No. R5-2007-0056.
- g. Total residual chlorine monitoring has increase from 1/week to continuous as the Discharger is able to monitoring chlorine residual on a continuous basis.
- h. Settleable solids (1/week), total coliform organisms (2/week), and pH (1/day) are new parameters subject to monitoring. Monitoring for settleable solids and total coliform organisms is necessary to determine compliance with discharge specifications and pH monitoring is necessary to characterize the discharge to the leachfield.

5. Effluent and Receiving Water Characterization Study.

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third and fourth year of this permit term, the Discharger is required to conduct semiannual monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

- e. Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- f. Pollution Prevention.** This Order requires the Discharger prepare pollution prevention plans following Water Code section 13263.3(d)(3) for pH. This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for this constituent based on a review of the pollution prevention plan.
- g. Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.
- h. Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- i. Constituent Study.** There are indications that the discharge may have a reasonable potential to cause or contribute to an exceedance of water quality objectives for cadmium. This Order requires the Discharger to complete a study of this constituent's potential effect in the receiving water. This reopener

provision allows the Central Valley Water Board to reopen this Order for addition of effluent limitations and requirements for this constituent if after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective.

- j. Groundwater Monitoring Well Network Technical Report.** Based on a review of the results of the Groundwater Monitoring Well Network Technical Report, this Order may be reopened for addition and/or modification of land discharge specifications, groundwater limitations, and/or water quality monitoring requirements.
- k. Leachfield Design Investigation.** Based on a review of the results of the Leachfield Design Investigation, this Order may be reopened for addition and/or modification of land discharge specifications, and/or monitoring requirements.
- l. Aluminum Site-Specific Study.** This Order requires the Discharger to conduct a site-specific study or other study acceptable to the Executive Officer to determine the appropriate chronic aquatic life criterion for aluminum. If the results of the Study indicate the appropriate chronic aquatic life criterion is being exceeded in the discharge, the permit may be reopened and aluminum effluent limitations established, if appropriate.
- m. Mixing Improvements.** This Order may be reopened to increase dilution credits and/or modify final effluent limitations, if appropriate, based on implementation of measures that improve mixing dynamics and minimize the size of the mixing zone(s). These improvements may include modifications to the diffuser.
- n. Flow Control.** This Order may be reopened for addition and/or modification of effluent limitations, mixing zones, and/or dilution credits, if appropriate, based on implementation of operational measures that ensure a higher minimum river to effluent flow ratio.
- o. Minimum Whitewater Recreation Flow Rate.** The minimum flow rate necessary for whitewater recreation is based on the measurement of flow releases at Box Canyon Dam. Box Canyon Dam is located approximately 0.6 mile upstream of the Discharger's outfall and the Central Valley Water Board is not aware of any major tributary between the Dam and the outfall that would significantly change the flow rate at the outfall compared to that at the Dam. The Discharger may not desire to use Box Canyon Dam flow rates and/or may be unable to adequately access the flow rate data from the operator of the Dam, therefore they may establish an in-stream flow measurement station upstream of their outfall (and below the Dam). This Order may be reopened to allow for an adjustment to the minimum whitewater recreation flow rate, if appropriate, as a result of the establishment of an upstream receiving water flow measurement station (located downstream of Box Canyon Dam) and the submittal of information that would justify a modification to the minimum whitewater recreation flow rate.

- p. **Ammonia Reduction Study.** Upon completion of the Ammonia Reduction Study, this Order may be reopened to add or modify final ammonia effluent limitations and/or mixing zone, as appropriate.

2. Special Studies and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page III-8.00). Based on whole effluent chronic toxicity testing performed by the Discharger from 2007 through 2011, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, “EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.” Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including

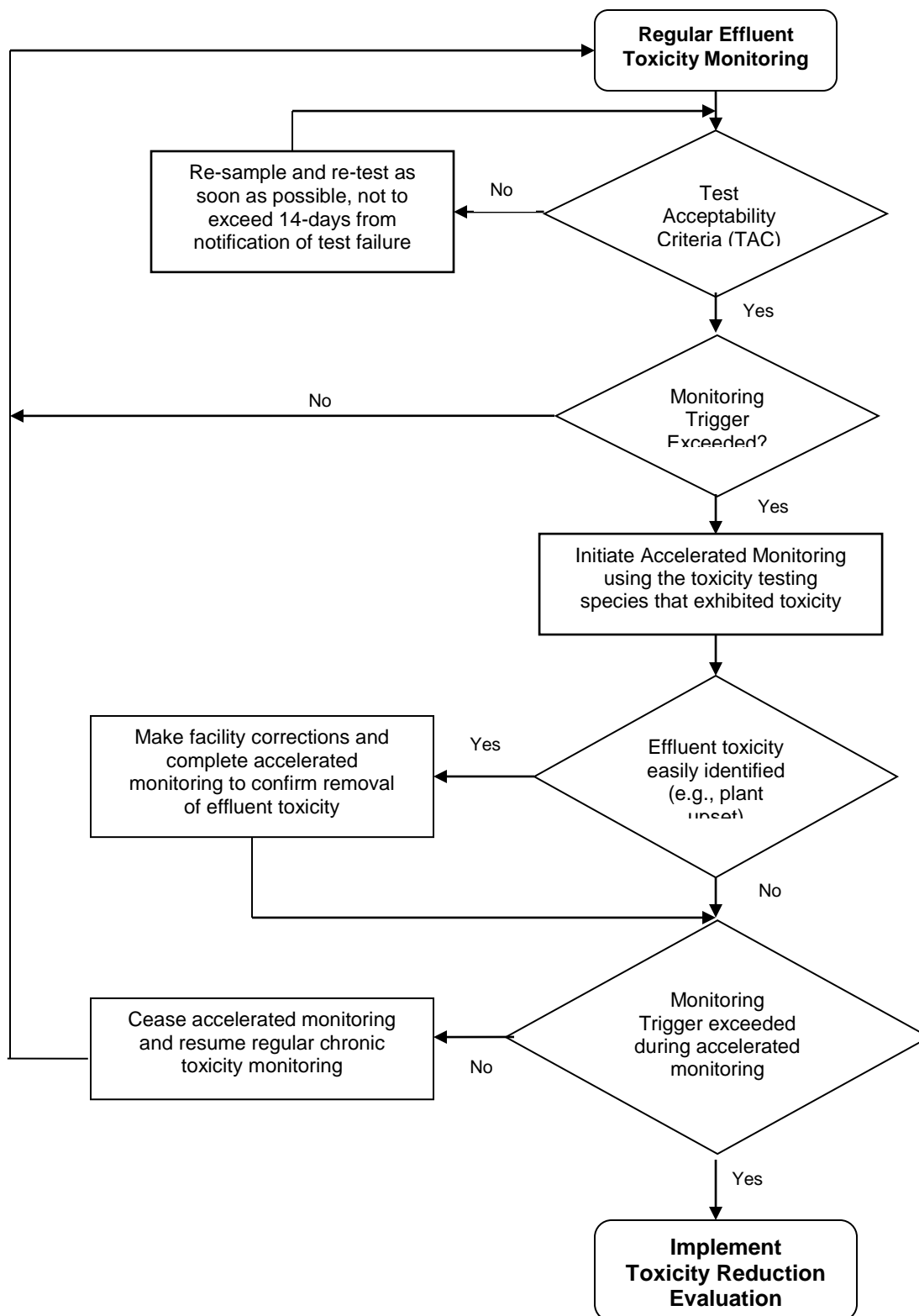
the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.
- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.
- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.
- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

**Figure F-1
WET Accelerated Monitoring Flow Chart**



- b. Constituent Study.** There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives: cadmium. This Order requires the Discharger to complete a study to evaluate the source of cadmium. If after a review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituents.
- c. Groundwater Monitoring Well Network Technical Report.** To determine compliance with the groundwater limitations contained in section V.B. of this Order, the Discharger is required to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of the leachfields.
- d. Leachfield Design Investigation.** This provision requires the Discharger to provide a technical engineering report on the design of the Facility leachfields. Specifically, the Discharger must provide design flow rate and loading rates for treatment and soil conditions (including percolation rates) at the leachfield site. The seasonal and intermittent use of the leachfields and subsequent effect on subsurface treatment, if any, must be addressed. Year-round usage of the leachfields must also be evaluated with respect to design constraints and/or treatment capacities.
- e. Total Residual Chlorine Monitoring.** The Facility's disinfection and dechlorination monitoring systems must be upgraded in order to reliability demonstrate compliance with the total chlorine residual effluent limitations.
- f. Continuous pH Analyzer.** The Discharger must install a continuous effluent pH analyzer in order demonstrate compliance with the effluent pH limitations.
- g. Outfall Line and Diffuser Repair.** The Facility's outfall line and diffuser must be repaired to eliminate leaks in the pipeline and to ensure effluent is discharged below the receiving water surface in a manner that optimizes the available mixing of the effluent with the receiving water.
- h. Aluminum Site-Specific Study.** This Order requires the Discharger to conduct a site-specific study or other study acceptable to the Executive Officer to determine the appropriate chronic aquatic life criterion for aluminum.
- i. Ammonia Reduction Study.** To evaluate whether best practicable treatment or control measures are being implemented at the facility in order to minimize the size of the ammonia mixing zone, the Discharger is required to submit an Ammonia Reduction Study. The study shall include a description of ammonia reduction measures implemented during the current permit cycle and/or scheduled for future implementation, site-specific constraints, if any, related to effluent ammonia reduction, and an evaluation of whether there are additional

practicable ammonia reduction measures that may be implemented at the facility in order to reduce ammonia concentrations in the effluent and minimize the size of the ammonia mixing zone. The study shall be submitted by the Discharger 180 days prior to the expiration date of this Order.

3. Best Management Practices and Pollution Prevention

- a. Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River.
- b. Water Code Section 13263.3(d)(3) Pollution Prevention Plans.** A pollution prevention plan for pH is required in this Order per Water Code section 13263.3(d)(1)(C). The pollution prevention plans required in section VI.C.7.b of this Order, shall, at a minimum, meet the requirements outlined in Water Code section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:
 - i.** An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.
 - ii.** An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.
 - iii.** An estimate of load reductions that may be attained through the methods identified in subparagraph ii.
 - iv.** A plan for monitoring the results of the pollution prevention program.
 - v.** A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.
 - vi.** A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.
 - vii.** A description of the Discharger's existing pollution prevention programs.

- viii.** An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.
- ix.** An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

4. Construction, Operation, and Maintenance Specifications

- a. Turbidity.** Operations specifications for turbidity are included as an indicator of the effectiveness of the treatment process and to assure compliance with effluent limitations for total coliform organisms. The tertiary treatment process is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period; and an instantaneous maximum of 10 NTU.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements.

- i.** The federal CWA section 307(b), and federal regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.
 - ii.** The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.
- b.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by 1 December 2006.

6. Other Special Provisions

- a. Operations specifications for wastewater, during critical flow periods, to be oxidized, coagulated, filtered, and adequately disinfected pursuant to DPH reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), or equivalent, are necessary in accordance with a 1 July 2003 DPH guidance memo on wastewater treatment levels for potential recreation and reclamation use. The effluent shall be disinfected in accordance with the total coliform organisms effluent limitations set forth in this Order, which are equivalent to "disinfected tertiary recycled water" disinfection requirements, however; wastewater treated for discharge need not comply with the CT¹ requirement specified in Title 22 Section 60301.230(a) or the disinfection process outlined in Section 60301.230(b).
- b. **Ownership Change.** To maintain the accountability of the operation of the Facility, the Discharger is required to notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

7. Compliance Schedules

- a. The Discharger submitted a request, and justification (dated 26 July 2012), for a compliance schedule for compliance with final effluent limitations for BOD₅, TSS, and pH and compliance with Title 22, or equivalent, disinfection requirements. The compliance schedule justification included all items specified in the Compliance Schedule Policy. This Order establishes a compliance schedule for the new, final, WQBELs for BOD₅, TSS, and pH, and Title 22 disinfection requirements and requires full compliance by **5 years from the effective date of this Order.**

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley

¹ The product of the total chlorine residual multiplied by the modal contact time measured at the same point.

Water Board staff has developed tentative WDRs. The Central Valley Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through physical posting, mailing, and internet posting.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Central Valley Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, written comments must be received at the Central Valley Water Board offices by 5:00 p.m. on **27 August 2012**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 4, 5 October 2012
Time: 8:30 a.m.
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Central Valley Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is www.waterboards.ca.gov/centralvalley where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDRs. The petition must be received by the State Water Board within 30 days of the Central Valley Water Board's action, and must be submitted to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Central Valley Water Board, reference this Facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Stacy Gotham at (530) 224-4993.

Attachment G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Basin Plan	MCL	Reasonable Potential
Aluminum (aquatic)	µg/L	377	20.9	87	750 ⁵	87 ⁵	--	--	--	MEC>C
Aluminum (HH)	µg/L	179 ¹	18.1 ¹	200	--	--	--	--	200 ⁴	No
Ammonia	mg/L	18.1	0.04	2.14	2.14	2.6 ⁹ 6.5 ⁸	--	--	--	MEC>C
Bis(2-Ethylhexyl) Phthalate	µg/L	3	1.2 ²	1.8	--	--	1.8	--	6 ³	MEC>C
Cadmium	µg/L	0.24J	0.32	0.27 ⁶ 0.22 ⁷	1.9 ⁶ 1.5 ⁷	1.36 ⁶ 1.18 ⁷	--	0.27 ⁶ 0.22 ⁷	5 ³	B>C
Chloride	mg/L	29.2	NA	250	--	--	--	--	250 ⁴	No
Chlorodibromomethane	µg/L	0.1	0.04	0.41	--	--	0.41	--	--	No
Copper	µg/L	32	1.2	4.89 ⁶ 4.17 ⁷	6.87 ⁶ 5.77 ⁷	4.89 ⁶ 4.17 ⁷	--	6.77 ⁶ 5.72 ⁷	1000 ⁴	MEC>C
Dichlorobromomethane	µg/L	1.4	<0.1	0.56	--	--	0.56	--	--	MEC>C
Electrical Conductivity	µmhos/cm	454	NA	900	--	--	--	--	900 ⁴	No
Iron	µg/L	274 ¹	82 ¹	300	--	1000 ⁵	--	--	300 ⁴	No
Lead	µg/L	0.4	<0.1	1.22 ⁶ 0.89 ⁷	31.23 ⁶ 22.73 ⁷	1.22 ⁶ 0.89 ⁷	--	--	--	No
Manganese	µg/L	39 ¹	11.1	50	--	--	--	--	50 ⁴	No
Nitrate	µg/L	6.74	0.06	10	--	--	--	--	10 ³	No
Mercury	µg/L	0.0079	0.0011	0.05	1.4	0.77	0.05	--	--	No
Silver	µg/L	1.4J	<0.1	1.11 ⁶ 0.8 ⁷	1.11 ⁶ 0.8 ⁷	--	--	--	100 ⁴	No
Total Dissolved Solids	mg/L	276	NA	500	--	--	--	--	500 ⁴	No
Zinc	µg/L	47.6	12.6	18.71 ⁶ 16.02 ⁷	63.2 ⁶ 54.0 ⁷	63.2 ⁶ 54.0 ⁷	--	18.71 ⁶ 16.02 ⁷	5000 ⁴	MEC>C

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Basin Plan	MCL	Reasonable Potential
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General Note: All inorganic concentrations are given as a total recoverable.

Background data date range is 27 October 2010 – 1 December 2010.

Effluent data range 2007 –2011.

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration or lowest detection level, if non-detect

C = Criterion used for Reasonable Potential Analysis

CMC = Criterion Maximum Concentration (CTR or NTR)

CCC = Criterion Continuous Concentration (CTR or NTR)

Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)

Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)

Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective

MCL = Drinking Water Standards Maximum Contaminant Level

NA = Not Available

ND = Non-detect

Footnotes:

(1) Maximum annual average

(2) Arithmetic mean

(3) Primary MCL

(4) Secondary MCL

(5) NAWQC

(6) Based on minimum receiving water hardness of 47 mg/L CaCO₃

(7) Based on minimum effluent hardness of 39 mg/L CaCO₃

(8) 4-day ammonia criteria

(9) 30-day ammonia criteria

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	HH	CMC	CCC	ECA _{HH} = AMEL _{HH}	AMEL/MDEL Multiplier _{HH}	MDEL _{HH}	ECA Multiplier _{acute}	LTA _{acute}	ECA Multiplier _{chronic}	LTA _{chronic}	Lowest LTA	AMEL Multiplier ₉₅	AMEL _{AL}	MDEL Multiplier ₉₉	MDEL _{AL}	Lowest AMEL	Lowest MDEL
Ammonia (as N)	mg/L	--	2.14	2.6 ¹ 6.5 ²	--	3	4	--	--	--	0.373	3.1	0.812 ¹ 0.581 ²	10.4 ¹ 18.8 ²	3.1	1.45	4.6	2.68	8.4	4.6	8.4
Bis(2-Ethylhexyl) Phthalate	µg/L	1.8	--	--	2	--	--	3.0	1.86	5.6	--	--	--	--	--	--	--	--	--	3.0	5.6
Copper, Total Recoverable	µg/L	--	5.72	4.17	--	3	4	--	--	--	0.288	5.56	0.489	7.85	5.56	1.63	9.1	3.47	19.3	9.1	19.3
DCBM	µg/L	0.56	--	--	2	--	--	1.5	2.41	3.6	--	--	--	--	--	--	--	--	--	1.5	3.6
Zinc, Total Recoverable	µg/L	--	16.0	54.0	--	3	4	--	--	--	0.312	8.18	0.518	113.7	8.18	1.57	12.9	3.20	26.2	12.9	26.2

¹ 30-day ammonia criteria.

² 4-day ammonia criteria.

ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

- I. Background.** Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from <http://www.waterboards.ca.gov/iswp/index.html>). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:
- A. Drinking water constituents.** Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.
 - B. Effluent and receiving water temperature.** This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.
 - C. Effluent and receiving water hardness and pH.** These are necessary because several of the CTR constituents are hardness and pH dependent.
 - D. Dioxin and furan sampling.** This Order does not require the Discharger to conduct dioxin and furan congener sampling. Monitoring for dioxin and furan congeners has been performed by the Discharger in conjunction with past monitoring requirements. Based on the results of past dioxin and furan sampling these pollutants are not present in the discharge. [Semiannual monitoring for 2,3,7,8-TCDD (Dioxin), as described below and contained in Table I-1, is required in this Order]

II. Monitoring Requirements.

- A. Semiannual Monitoring.** Semiannual priority pollutant samples shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) and analyzed for the constituents listed in Table I-1. Semiannual monitoring shall be conducted for 2 years (4 consecutive samples, evenly distributed throughout discharge to surface water period) and the results of such monitoring be submitted to the Central Valley Water Board, during the fourth year of the permit term. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

B. Semi-annual Monitoring (dioxins and furans only). NOT APPLICABLE.

C. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

D. Sample type. All effluent samples shall be taken as 24-hour flow proportioned or time composite samples.¹ All receiving water samples shall be taken as grab samples.

Table I-1. Priority Pollutants

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
28	1,1-Dichloroethane	75343	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	0.5	EPA 8260B
17	Acrolein	107028	2	EPA 8260B
18	Acrylonitrile	107131	2	EPA 8260B
19	Benzene	71432	0.5	EPA 8260B
20	Bromoform	75252	0.5	EPA 8260B
34	Bromomethane	74839	1	EPA 8260B
21	Carbon tetrachloride	56235	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	0.5	EPA 8260B
24	Chloroethane	75003	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	1	EPA 8260B
26	Chloroform	67663	0.5	EPA 8260B
35	Chloromethane	74873	0.5	EPA 8260B
23	Dibromochloromethane	124481	0.5	EPA 8260B
27	Dichlorobromomethane	75274	0.5	EPA 8260B

¹ Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
36	Dichloromethane	75092	0.5	EPA 8260B
33	Ethylbenzene	100414	0.5	EPA 8260B
88	Hexachlorobenzene	118741	1	EPA 8260B
89	Hexachlorobutadiene	87683	1	EPA 8260B
91	Hexachloroethane	67721	1	EPA 8260B
94	Naphthalene	91203	10	EPA 8260B
38	Tetrachloroethene	127184	0.5	EPA 8260B
39	Toluene	108883	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	0.5	EPA 8260B
43	Trichloroethene	79016	0.5	EPA 8260B
44	Vinyl chloride	75014	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	0.5	EPA 8260B
	Trichlorofluoromethane	75694	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10	EPA 8260B
	Styrene	100425	0.5	EPA 8260B
	Xylenes	1330207	0.5	EPA 8260B
60	1,2-Benzanthracene	56553	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	1	EPA 8270C
45	2-Chlorophenol	95578	2	EPA 8270C
46	2,4-Dichlorophenol	120832	1	EPA 8270C
47	2,4-Dimethylphenol	105679	2	EPA 8270C
49	2,4-Dinitrophenol	51285	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	5	EPA 8270C
50	2-Nitrophenol	25154557	10	EPA 8270C
71	2-Chloronaphthalene	91587	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	10	EPA 8270C
52	4-Chloro-3-methylphenol	59507	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	10	EPA 8270C
51	4-Nitrophenol	100027	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	5	EPA 8270C
56	Acenaphthene	83329	1	EPA 8270C
57	Acenaphthylene	208968	10	EPA 8270C

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
58	Anthracene	120127	10	EPA 8270C
59	Benzidine	92875	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	0.1	EPA 8270C
63	Benzo(g,h,i)perylene	191242	5	EPA 8270C
64	Benzo(k)fluoranthene	207089	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	3	EPA 8270C
70	Butyl benzyl phthalate	85687	10	EPA 8270C
73	Chrysene	218019	5	EPA 8270C
81	Di-n-butylphthalate	84742	10	EPA 8270C
84	Di-n-octylphthalate	117840	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	0.1	EPA 8270C
79	Diethyl phthalate	84662	2	EPA 8270C
80	Dimethyl phthalate	131113	2	EPA 8270C
86	Fluoranthene	206440	10	EPA 8270C
87	Fluorene	86737	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	0.05	EPA 8270C
93	Isophorone	78591	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	5	EPA 8270C
95	Nitrobenzene	98953	10	EPA 8270C
53	Pentachlorophenol	87865	0.2	EPA 8270C
99	Phenanthrene	85018	5	EPA 8270C
54	Phenol	108952	1	EPA 8270C
100	Pyrene	129000	10	EPA 8270C
	Aluminum	7429905	50	EPA 6020/200.8
1	Antimony	7440360	5	EPA 6020/200.8
2	Arsenic	7440382	0.01	EPA 1632
15	Asbestos	1332214	0.2 MFL >10µm	EPA/600/R-93/116(PCM)
	Barium	7440393	100	EPA 6020/200.8
3	Beryllium	7440417	1	EPA 6020/200.8
4	Cadmium	7440439	0.25	EPA 1638/200.8

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
5a	Chromium (total)	7440473	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	0.5	EPA 7199/1636
6	Copper	7440508	0.5	EPA 6020/200.8
14	Cyanide	57125	5	EPA 9012A
	Fluoride	7782414	0.1	EPA 300
	Iron	7439896	100	EPA 6020/200.8
7	Lead	7439921	0.5	EPA 1638
8	Mercury	7439976	0.0002 (11)	EPA 1669/1631
	Manganese	7439965	20	EPA 6020/200.8
9	Nickel	7440020	5	EPA 6020/200.8
10	Selenium	7782492	5	EPA 6020/200.8
11	Silver	7440224	1	EPA 6020/200.8
12	Thallium	7440280	1	EPA 6020/200.8
	Tributyltin	688733	0.002	EV-024/025
13	Zinc	7440666	10	EPA 6020/200.8
110	4,4'-DDD	72548	0.02	EPA 8081A
109	4,4'-DDE	72559	0.01	EPA 8081A
108	4,4'-DDT	50293	0.01	EPA 8081A
112	alpha-Endosulfan	959988	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01	EPA 8081A
	Alachlor	15972608	1	EPA 8081A
102	Aldrin	309002	0.005	EPA 8081A
113	beta-Endosulfan	33213659	0.01	EPA 8081A
104	beta-Hexachlorocyclohexane	319857	0.005	EPA 8081A
107	Chlordane	57749	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	0.005	EPA 8081A
111	Dieldrin	60571	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	0.05	EPA 8081A
115	Endrin	72208	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	0.01	EPA 8081A
117	Heptachlor	76448	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.019	EPA 8081A
119	PCB-1016	12674112	0.5	EPA 8082
120	PCB-1221	11104282	0.5	EPA 8082
121	PCB-1232	11141165	0.5	EPA 8082

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
122	PCB-1242	53469219	0.5	EPA 8082
123	PCB-1248	12672296	0.5	EPA 8082
124	PCB-1254	11097691	0.5	EPA 8082
125	PCB-1260	11096825	0.5	EPA 8082
126	Toxaphene	8001352	0.5	EPA 8081A
	Atrazine	1912249	1	EPA 8141A
	Bentazon	25057890	2	EPA 643/ 515.2
	Carbofuran	1563662	5	EPA 8318
	2,4-D	94757	10	EPA 8151A
	Dalapon	75990	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	5	EPA 8270C
	Dinoseb	88857	2	EPA 8151A
	Diquat	85007	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	45	EPA 548.1
	Ethylene Dibromide	106934	0.02	EPA 8260B/504
	Glyphosate	1071836	25	HPLC/EPA 547
	Methoxychlor	72435	10	EPA 8081A
	Molinate (Ordram)	2212671	2	EPA 634
	Oxamyl	23135220	20	EPA 8318/632
	Picloram	1918021	1	EPA 8151A
	Simazine (Princep)	122349	1	EPA 8141A
	Thiobencarb	28249776	1	HPLC/EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	1	EPA 8151A
	Diazinon	333415	0.25	EPA 8141A/GCMS
	Chlorpyrifos	2921882	1	EPA 8141A/GCMS
	Ammonia (as N)	7664417		EPA 350.1
	Chloride	16887006		EPA 300.0
	Flow			
	Hardness (as CaCO ₃)			EPA 130.2
	Foaming Agents (MBAS)			SM5540C
	Nitrate (as N)	14797558	2,000	EPA 300.0
	Nitrite (as N)	14797650	400	EPA 300.0
	pH		0.1	EPA 150.1

CTR #	Constituent	CAS Number	Criterion Quantitation Limit µg/L or noted	Suggested Test Methods
	Phosphorus, Total (as P)	7723140		EPA 365.3
	Specific conductance (EC)			EPA 120.1
	Sulfate		500	EPA 300.0
	Sulfide (as S)			EPA 376.2
	Sulfite (as SO ₃)			SM4500-SO3
	Temperature			
	Total Dissolved Solids (TDS)			EPA 160.1

FOOTNOTES:

III. Additional Study Requirements

- A. Laboratory Requirements.** The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code 13176 and must include quality assurance/quality control data with their reports (ELAP certified).
- B. Criterion Quantitation Limit (CQL).** The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the SIP or the detection limits for purposes of reporting (DLRs) below the controlling water quality criterion concentrations summarized in Table I-1 of this Order. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest of the MLs and DLR. Table I-1 contains suggested analytical procedures. The Discharger is not required to

use these specific procedures as long as the procedure selected achieves the desired minimum detection level.

- C. Method Detection Limit (MDL).** The method detection limit for the laboratory shall be determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
- D. Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.
- E. Reporting Protocols.** The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:
1. Sample results greater than or equal to the reported RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
 2. Sample results less than the reported RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
 3. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (+ or – a percentage of the reported value), numerical ranges (low and high), or any other means considered appropriate by the laboratory.
 4. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

F. Data Format. The monitoring report shall contain the following information for each pollutant:

1. The name of the constituent.
2. Sampling location.
3. The date the sample was collected.
4. The time the sample was collected.
5. The date the sample was analyzed. For organic analyses, the extraction data will also be indicated to assure that hold times are not exceeded for prepared samples.
6. The analytical method utilized.
7. The measured or estimated concentration.
8. The required Criterion Quantitation Limit (CQL).
9. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
10. The laboratory's lowest reporting limit (RL).
11. Any additional comments.

ATTACHMENT J – DIOXIN AND FURAN SAMPLING – NOT APPLICABLE